Overall 14 CFR (FARS) List and Associated Review Phases

This sheet provides an overall list of 14 CFR parts (FARS) that may be of interest to the RLV O&M effort.

The following fields are included:

CFR Part # - Identifier of Part in the CFR
Title - Complete title of the FAR Part
 # Sub-Parts - Number of separate topical paragraphs within the Part
Primary Focus - A General description of the area covered by the FAR
Review Phase - Targeted phase for review of that Part. Where multiple phases are indicated, it is expected that the majority of the part may be deferred after an initial review. Some Phase III items may not need to be reviewed at all (e.g. Agricultural Use).
Notes - Miscellaneous

CFR Part #	Title	Primary Focus (Ops, Maint, Dsgn, Proc, Othr)	RLV O&M Review Phase
Subchapter A - Definitions			
1	Definitions And Abbreviations	Othr	I
Subchapter B - Procedural Rules			
11	General Rulemaking Procedures	Proc	I
13	Investigative And Enforcement Procedures	Proc	I
14	Rules Implementing The Equal Access To Justice Act Of 1980	Proc	III
15	Administrative Claims Under Federal Tort Claims Act	Proc	III
16	Rules Of Practice For Federally Assisted Airport Enforcement Proceedings	Proc	III
17	Procedures For Protests And Contracts Disputes	Proc	III
Subchapter C - Aircraft			
21	Certification Procedures For Products And Parts	Dsgn, Maint	I
23	Airworthiness Standards: Normal, Utility, Acrobatic, And Commuter Category Airplanes	Dsgn	I,II
25	Airworthiness Standards: Transport Category Airplanes	Dsgn	I,II

CFR Part #	Title	Primary Focus (Ops, Maint, Dsgn, Proc, Othr)	RLV O&M Review Phase
27	Airworthiness Standards: Normal Category Rotorcraft	Dsgn	III
29	Airworthiness Standards: Transport Category Rotorcraft	Dsgn	III
31	Airworthiness Standards: Manned Free Balloons	Dsgn	III
33	Airworthiness Standards: Aircraft Engines	Dsgn	I,II
34	Fuel Venting And Exhaust Emission Requirements For Turbine Engine Powered Airplanes	Dsgn	I,II
35	Airworthiness Standards: Propellers	Dsgn	III
36	Noise Standards: Aircraft Type And Airworthiness Certification	Dsgn	III
39	Airworthiness Directives	Dsgn	I
43	Maintenance, Preventive Maintenance, Rebuilding, And Alteration	Dsgn	I
45	Identification And Registration Marking	Dsgn	III
47	Aircraft Registration	Dsgn	III
49	Recording Of Aircraft Titles And Security Documents	Dsgn	III
Subchapter D - Airmen			
61	Certification: Pilots, Flight Instructors, And Ground Instructors	Ops	III
63	Certification: Flight Crewmembers Other Than Pilots	Ops	III
65	Certification: Airmen Other Than Flight Crewmembers	Maint	I
67	Medical Standards And Certification	Ops	III
Subchapter E - Airspace			
71	Designation Of Class A, Class B, Class C, Class D, And Class E Airspace Areas; Airways; Routes; And Reporting Points	Ops	III
73	Special Use Airspace	Ops	II,III
77	Objects Affecting Navigable Airspace	Ops	III
Subchapter F - Air Traffic and General Operating Rules			
91	General Operating And Flight Rules	Ops	I
93	Special Air Traffic Rules And Airport Traffic Patterns	Ops	II

CFR Part #	Title	Primary Focus (Ops, Maint, Dsgn, Proc, Othr)	RLV O&M Review Phase
95	IFR Altitudes	Ops	II
97	Standard Instrument Approach Procedures	Ops	II
99	Security Control Of Air Traffic	Ops	II
101	Moored Balloons, Kites, Unmanned Rockets And Unmanned Free Balloons	Ops	III
103	Ultralight Vehicles	Ops	III
105	Parachute Operations	Ops	II
Subchapter G - Air Carriers and Operations for Compensation or Hire: Certification and Operations			
119	Certification: Air Carriers And Commercial Operators	Ops, Maint	II
121	Operating Requirements: Domestic, Flag, And Supplemental Operations	Ops, Maint	II
125	Certification And Operations: Airplanes Having A Seating Capacity Of 20 Or More Passengers Or A Maximum Payload Capacity Of 6,000 Pounds Or More; And Rules Governing Persons On Board Such Aircraft	Ops, Maint	III
129	Operations: Foreign Air Carriers And Foreign Operators Of U.S.-Registered Aircraft Engaged In Common Carriage	Ops, Maint	III
133	Rotorcraft External-Load Operations	Ops, Maint	III
135	Operating Requirements: Commuter And On Demand Operations And Rules Governing Persons On Board Such Aircraft	Ops, Maint	I,II
137	Agricultural Aircraft Operations	Ops, Maint	III
139	Certification And Operations: Land Airports Serving Certain Air Carriers	Ops, Maint	I,II
Subchapter H - Schools and Other Certificated Agencies			
141	Pilot Schools	Ops	III
142	Training Centers	Ops, Maint	II
145	Repair Stations	Maint	I
147	Aviation Maintenance Technician Schools	Maint	I
Subchapter I - Airports			
150	Airport Noise Compatibility Planning	Ops	III
151	Federal Aid To Airports	Othr	III

CFR Part #	Title	Primary Focus (Ops, Maint, Dsgn, Proc, Othr)	RLV O&M Review Phase
152	Airport Aid Program	Othr	III
155	Release Of Airport Property From Surplus Property Disposal Restrictions	Othr	III
156	State Block Grant Pilot Program	Othr	III
157	Notice Of Construction, Alteration, Activation, And Deactivation Of Airports	Othr	III
158	Passenger Facility Charges (PFC's)	Othr	III
161	Notice And Approval Of Airport Noise And Access Restrictions	Othr	III
169	Expenditure Of Federal Funds For Nonmilitary Airports Or Air Navigation Facilities Thereon	Othr	III
Subchapter J - Navigational Facilities			
170	Establishment And Discontinuance Criteria For Air Traffic Control Services And Navigational Facilities	Ops	III
171	Non-Federal Navigation Facilities	Ops	III
Subchapter K - Administrative Regulations			
183	Representatives Of The Administrator	Maint	I
185	Testimony By Employees And Production Of Records In Legal Proceedings, And Service Of Legal Process And Pleadings	Othr	II
187	Fees	Othr	II
189	Use Of Federal Aviation Administration Communications System	Othr	III
193	Protection Of Voluntarily Submitted Information	Othr	II
Subchapter N - War Risk Insurance			
198	Aviation Insurance	Othr	III
Chapter II--Office Of The Secretary, Department Of Transportation (Aviation Proceedings)			
Subchapter A - Economic Regulations			
200	Definitions And Instructions	Othr	III
201	Air Carrier Authority Under Subtitle Vii Of Title 49 Of The United States Code--[Amended]	Othr	III
203	Waiver Of Warsaw Convention Liability Limits And Defenses	Othr	III
204	Data To Support Fitness Determinations	Ops	III

CFR Part #	Title	Primary Focus (Ops, Maint, Dsgn, Proc, Othr)	RLV O&M Review Phase
205	Aircraft Accident Liability Insurance	Ops	III
206	Certificates Of Public Convenience And Necessity: Special Authorizations And Exemptions	Ops	III
207	Charter Trips By U.S. Scheduled Air Carriers	Ops	III
208	Charter Trips By U.S. Charter Air Carriers	Ops	III
211	Applications For Permits To Foreign Air Carriers	Ops	III
212	Charter Rules For U.S. And Foreign Direct Air Carriers	Ops	III
213	Terms, Conditions And Limitations Of Foreign Air Carrier Permits	Ops	III
214	Terms, Conditions, And Limitations Of Foreign Air Carrier Permits Authorizing Charter Transportation Only	Ops	III
215	Use And Change Of Names Of Air Carriers, Foreign Air Carriers And Commuter Air Carriers	Ops	III
216	Commingling Of Blind Sector Traffic By Foreign Air Carriers	Ops	III
217	Reporting Traffic Statistics By Foreign Air Carriers In Civilian Scheduled, Charter, And Nonscheduled Services	Ops	III
218	Lease By Foreign Air Carrier Or Other Foreign Person Of Aircraft With Crew	Ops	III
221	Tariffs	Ops	III
222	Intermodal Cargo Services By Foreign Air Carriers	Ops	III
223	Free And Reduced-Rate Transportation	Ops	III
232	Transportation Of Mail, Review Of Orders Of Postmaster General	Ops	III
234	Airline Service Quality Performance Reports	Ops	III
240	Inspection Of Accounts And Property	Ops	III
241	Uniform System Of Accounts And Reports For Large Certificated Air Carriers	Ops	III
243	Passenger Manifest Information	Ops	III
247	Direct Airport-To-Airport Mileage Records	Ops	III
248	Submission Of Audit Reports	Ops	III
249	Preservation Of Air Carrier Records	Ops	III
250	Oversales	Ops	III

CFR Part #	Title	Primary Focus (Ops, Maint, Dsgn, Proc, Othr)	RLV O&M Review Phase
252	Smoking Aboard Aircraft	Ops	III
253	Notice Of Terms Of Contract Of Carriage	Ops	III
254	Domestic Baggage Liability	Ops	III
255	Carrier-Owned Computer Reservations Systems	Ops	III
256	Display Of Joint Operations In Carrier-Owned Computer Reservations Systems	Ops	III
257	Disclosure Of Code-Sharing Arrangements And Long-Term Wet Leases	Ops	III
258	Disclosure Of Change-Of-Gauge Services	Ops	III
271	Guidelines For Subsidizing Air Carriers Providing Essential Air Transportation	Ops	III
272	Essential Air Service To The Freely Associated States	Ops	III
291	Cargo Operations In Interstate Air Transportation	Ops	III
292	International Cargo Transportation	Ops	III
293	International Passenger Transportation	Ops	III
294	Canadian Charter Air Taxi Operators	Ops	III
296	Indirect Air Transportation Of Property	Ops	III
297	Foreign Air Freight Forwarders And Foreign Cooperative Shippers Associations	Ops	III
298	Exemptions For Air Taxi And Commuter Air Carrier Operations	Ops	III
Subchapter B - Procedural Regulations			
300	Rules Of Conduct In DOT Proceedings Under This Chapter	Proc	III
302	Rules Of Practice In Proceedings	Proc	III
303	Review Of Air Carrier Agreements	Proc	III
305	Rules Of Practice In Informal Nonpublic Investigations	Proc	III
313	Implementation Of The Energy Policy And Conservation Act	Proc	III
314	Employee Protection Program	Proc	III
323	Terminations, Suspensions, And Reductions Of Service	Proc	III
325	Essential Air Service Procedures	Proc	III
330	Procedures For Compensation Of Air Carriers	Proc	III

CFR Part #	Title	Primary Focus (Ops, Maint, Dsgn, Proc, Othr)	RLV O&M Review Phase
Subchapter D - Special Regulations			
372	Overseas Military Personnel Charters	Othr	III
374	Implementation Of The Consumer Credit Protection Act With Respect To Air Carriers And Foreign Air Carriers	Othr	III
374a	Extension Of Credit By Airlines To Federal Political Candidates	Othr	III
375	Navigation Of Foreign Civil Aircraft Within The United States	Ops	III
377	Continuance Of Expired Authorizations By Operation Of Law Pending Final Determination Of Applications For Renewal Thereof	Ops	III
380	Public Charters	Ops	III
381	Special Event Tours	Ops	I
382	Nondiscrimination On The Basis Of Disability In Air Travel	Ops	III
383	Civil Penalties	Ops, Maint	I
Subchapter E - Organization			
385	Staff Assignments And Review Of Action Under Assignments	Proc	III
389	Fees And Charges For Special Services	Proc	III
Subchapter F - Policy Statements			
398	Guidelines For Individual Determinations Of Basic Essential Air Service	Proc	III
399	Statements Of General Policy	Proc	III
Chapter III--Commercial Space Transportation, Federal Aviation Administration, Department Of Transportation			
Subchapter A - General			
400	Basis And Scope	Proc	I
401	Organization And Definitions	Proc	I
Subchapter B - Procedure			
404	Regulation And Licensing Requirements	Ops, Maint	I
405	Investigations And Enforcement	Proc	I
406	Investigations, Enforcement, And Administrative Review	Proc	I

CFR Part #	Title	Primary Focus (Ops, Maint, Dsgn, Proc, Othr)	RLV O&M Review Phase
Subchapter C - Licensing			
413	License Application Procedures	Proc	I
415	Launch License	Ops, Maint	I
420	License To Operate A Launch Site	Ops, Maint	I
431	Launch And Reentry Of A Reusable Launch Vehicle	Ops, Maint	I
433	License To Operate A Reentry Site	Ops, Maint	I
435	Reentry Of A Reentry Vehicle Other Than A Reusable Launch Vehicle (RLV)	Ops, Maint	I
440	Financial Responsibility	Ops, Maint	I
450	Financial Responsibility	Ops, Maint	I

14 CFR 1 Definition And Abbreviations

Effective Date	05/09/02
Contents and review purpose	This FAR part contains aviation definitions and abbreviations. This FAR was reviewed for definitions and abbreviations that may have been used with a conflicting meaning in the RLV domain. A review of these terms was conducted from both an aviation and an RLV perspective to identify conflicts in terminology that might prove problematic. An "OK" or "agree" response in the RLV Perspective column indicates that with the proposed changes offered by the aviation perspective review, the term would be acceptable in the RLV domain.

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
		Administrator	*Administrator* means the Federal Aviation Administrator or any person to whom he has delegated his authority in the matter concerned.	OK		
		Aerodynamic Coefficient	*Aerodynamic coefficients* mean non-dimensional coefficients for aerodynamic forces and moments.	OK		
		Air Carrier	*Air carrier* means a person who undertakes directly by lease, or other arrangement, to engage in air transportation.	Aerospace Carrier	Launch Operator is the term used in the NPRM	
		Air Commerce	*Air commerce* means interstate, overseas, or foreign air commerce or the transportation of mail by aircraft or any operation or navigation of aircraft within the limits of any Federal airway or any operation or navigation of aircraft which	Aerospace Commerce - current term uses aircraft in three places. Also includes reference to Federal Airways.	Space Commerce - encompasses the use of space transportation vehicles, systems, and services to provide access to space for private and government (civil or	

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
			directly affects, or which may endanger safety in, interstate, overseas, or foreign air commerce.		military) users.	
		Aircraft	*Aircraft* means a device that is used or intended to be used for flight in the air.	Aerospacecraft or Spaceplane - second term is problematic since some proposed RLVs are intended to operate in both air and space.	*Space Transportation Vehicle means a device that is used or intended to be used for flight between earth and earth orbit. (note: an aerospace vehicle is defined as a vehicle capable of flight within and outside the sensible atmosphere)*	
		Aircraft Engine	*Aircraft engine* means an engine that is used or intended to be used for propelling aircraft. It includes turbosuperchargers, appurtenances, and accessories necessary for its functioning, but does not include propellers.	Problematic - consists of a laundry list of features with exclusions for rotating blades in an engine. Suggest new term.	*Rocket engine* means an engine that is used or intended to be used for propelling an aerospace vehicle. It is a reaction engine that contains within itself, or carries along with itself, all the substances necessary for its operation or the consumption or combustion of its fuel, not requiring intake of any outside substance and hence capable of operation	

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
					in outer space.	
		Airframe	*Airframe* means the fuselage, booms, nacelles, cowlings, fairings, airfoil surfaces (including rotors but excluding propellers and rotating airfoils of engines), and landing gear of an aircraft and their accessories and controls.	Tied to aircraft	Airframe - the supporting structure and aerodynamic components of an aerospace vehicle	
		Airplane	*Airplane* means an engine-driven fixed-wing aircraft heavier than air, which is supported in flight by the dynamic reaction of the air against its wings.	OK		
		Airport	*Airport* means an area of land or water that is used or intended to be used for the landing and takeoff of aircraft, and includes its buildings and facilities, if any.	Problematic - definition could be modified to include space in the operation regime although "air" remains a misnomer in term	Spaceport - means an area of land or water that is used or intended to be used for the landing and takeoff of space transportation vehicles, and includes its buildings and facilities, if any.	An "integrated port", could be called an aerospace port
		Airship	*Airship* means an engine-driven lighter-than-air aircraft that can be steered.			
		Air Traffic	*Air traffic* means aircraft operating in the air or on an airport surface, exclusive of loading ramps and parking areas.		Modify definition to include aerospace vehicles and spaceports or use the term aerospace traffic	

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
					that means aerospace vehicle traffic operating on-orbit, in the air, or on a spaceport surface exclusive of loading ramps and parking areas.	
		Air Traffic Clearance	*Air traffic clearance* means an authorization by air traffic control, for the purpose of preventing collision between known aircraft, for an aircraft to proceed under specified traffic conditions within controlled airspace.	Problematic - defined in terms of aircraft and controlled airspace	Modify definition to include aerospace vehicles: Air traffic clearance means an authorization by air traffic control, for the purpose of preventing collision between known aircraft/aerospace vehicles, for an aircraft/aerospace vehicles to proceed under specified traffic conditions within controlled airspace.	*Airspace is an industry- common term*
		Air Traffic Control	*Air traffic control* means a service operated by appropriate authority to promote the safe, orderly, and expeditious flow of air traffic.	Aerospace Traffic Control - tied to air traffic currently	Aerospace Traffic Control - means a service operated by appropriate authority to promote safe, orderly, and expeditious flow of aerospace traffic. To include COLA and COMBO	

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
		Air Transportation	*Air transportation* means interstate, overseas, or foreign air transportation or the transportation of mail by aircraft.	Problematic - consists of a laundry list that either needs to be expanded or a new term introduced	Aerospace Transportation	
		Alert Area	*Alert Area.* An alert area is established to inform pilots of a specific area wherein a high volume of pilot training or an unusual type of aeronautical activity is conducted.	OK	SUA	
		Alternate Airport	*Alternate airport* means an airport at which an aircraft may land if a landing at the intended airport becomes inadvisable.	Modify definition to include aerospacecraft	Include either space transportation vehicles or aerospace vehicles	
		Altitude Engine	*Altitude engine* means a reciprocating aircraft engine having a rated takeoff power that is producible from sea level to an established higher altitude.			
		Appliance	*Appliance* means any instrument, mechanism, equipment, part, apparatus, appurtenance, or accessory, including communications equipment, that is used or intended to be used in operating or controlling an aircraft in flight, is installed in or attached to the aircraft, and	Modify with changes for aircraft and airframe	Aerospace industry does not use the term appliance -- use systems, subsystems, components, etc.	

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
			is not part of an airframe, engine, or propeller.			
		Approved	*Approved*, unless used with reference to another person, means approved by the Administrator.	OK	OK	
		Area Navigation	*Area navigation (RNAV)* means a method of navigation that permits aircraft operations on any desired course within the coverage of station-referenced navigation signals or within the limits of self-contained system capability.	Modify with changes for aircraft (one place)		
		Area Navigation Low Route	*Area navigation low route* means an area navigation route within the airspace extending upward from 1,200 feet above the surface of the earth to, but not including, 18,000 feet MSL.	OK		
		Area Navigation High Route	*Area navigation high route* means an area navigation route within the airspace extending upward from, and including, 18,000 feet MSL to flight level 450.	OK - need to possibly add one for sub orbital altitudes - consider capability of existing navaids	E.g. extend "high altitudes" to 200,000 feet	
		Armed Forces	*Armed Forces* means the Army, Navy, Air Force, Marine Corps, and Coast Guard, including their	OK	OK	

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
			regular and reserve components and members serving without component status.			
		Autorotation	*Autorotation* means a rotorcraft flight condition in which the lifting rotor is driven entirely by action of the air when the rotorcraft is in motion.	OK	OK	
		Auxiliary Rotor	*Auxiliary rotor* means a rotor that serves either to counteract the effect of the main rotor torque on a rotorcraft or to maneuver the rotorcraft about one or more of its three principal axes.	OK	OK	
		Balloon	*Balloon* means a lighter-than-air aircraft that is not engine driven, and that sustains flight through the use of either gas buoyancy or an airborne heater.	OK	OK	
		Brake Horsepower	*Brake horsepower* means the power delivered at the propeller shaft (main drive or main output) of an aircraft engine.	Modify with changes for aircraft (one place)	NO - N/A	
		Calibrated Airspeed	*Calibrated airspeed* means the indicated airspeed of an aircraft, corrected for position and instrument error. Calibrated airspeed is	Add phrase, "or aero-spacecraft operating in air"	Earth-relative airspeed	

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
			equal to true airspeed in standard atmosphere at sea level.			
		Canard	*Canard* means the forward wing of a canard configuration and may be a fixed, movable, or variable geometry surface, with or without control surfaces.	OK	OK	
		Canard Configuration	*Canard configuration* means a configuration in which the span of the forward wing is substantially less than that of the main wing.	OK	OK	
		Category	*Category:*	Two-part definition, both of which are problematic. Need to address terms airmen, aircraft, and classification of aircraft.	These are not typically applicable nor appropriate to aerospace vehicles/RLVs; however, could be modified as true "certification-type" regulations evolve	
			(1) As used with respect to the certification, ratings, privileges, and limitations of airmen, means a broad classification of aircraft. Examples include: airplane; rotorcraft; glider; and lighter-than-air; and			
			(2) As used with respect to the certification of aircraft,			

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
			means a grouping of aircraft based upon intended use or operating limitations. Examples include: transport, normal, utility, acrobatic, limited, restricted, and provisional.			
		Category A	*Category A,* with respect to transport category rotorcraft, means multiengine rotorcraft designed with engine and system isolation features specified in Part 29 and utilizing scheduled takeoff and landing operations under a critical engine failure concept which assures adequate designated surface area and adequate performance capability for continued safe flight in the event of engine failure.	OK (associated with Pt. 29 rotorcraft)		
		Category B	*Category B,* with respect to transport category rotorcraft, means single-engine or multiengine rotorcraft which do not fully meet all Category A standards. Category B rotorcraft have no guaranteed stay-up ability in the event of engine failure	OK (associated with Pt. 29 rotorcraft)		

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
			and unscheduled landing is assumed.			
		Category II Operations	*Category II operations*, with respect to the operation of aircraft, means a straight-in ILS approach to the runway of an airport under a Category II ILS instrument approach procedure issued by the Administrator or other appropriate authority.	Modify with changes for aircraft (one place), also address airport (one place)		
		Category III Operations	*Category III operations,* with respect to the operation of aircraft, means an ILS approach to, and landing on, the runway of an airport using a Category III ILS instrument approach procedure issued by the Administrator or other appropriate authority.	Modify with changes for aircraft (one place), also address airport (one place)		
			Category IIIa operations, an ILS approach and landing with no decision height (DH), or a DH below 100 feet (30 meters), and controlling runway visual range not less than 700 feet (200 meters).			
		Category IIIb Operations	*Category IIIb operations,* an ILS approach and landing with no DH, or with a DH below 50 feet (15 meters), and controlling runway	OK		

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
			visual range less than 700 feet (200 meters), but not less than 150 feet (50 meters).			
		Category IIIc Operations	*Category IIIc operations,* an ILS approach and landing with no DH and no runway visual range limitation.	OK		
		Ceiling	*Ceiling* means the height above the earth's surface of the lowest layer of clouds or obscuring phenomena that is reported as "broken", "overcast", or "obscuration", and not classified as "thin" or "partial".	OK		
		Civil Aircraft	*Civil aircraft* means aircraft other than public aircraft.	New Term - modify with changes for aircraft	Civil aerospace vehicle	
		Class	*Class:*	Two-part definition, both of which are problematic. Need to address terms airmen, aircraft, and classification of aircraft.	These are not typically applicable nor appropriate to aerospace vehicles/RLVs; however, could be modified as true "certification-type" regulations evolve	
			(1) As used with respect to the certification, ratings, privileges, and limitations of airmen, means a classification of aircraft within a category having similar operating			

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
			characteristics. Examples include: single engine; multiengine; land; water; gyroplane; helicopter; airship; and free balloon; and			
			(2) As used with respect to the certification of aircraft, means a broad grouping of aircraft having similar characteristics of propulsion, flight, or landing. Examples include: airplane; rotorcraft; glider; balloon; landplane; and seaplane.			
		Clearway	*Clearway* means:	OK	N/A	
			(1) For turbine engine powered airplanes certificated after August 29, 1959, an area beyond the runway, not less than 500 feet wide, centrally located about the extended centerline of the runway, and under the control of the airport authorities. The clearway is expressed in terms of a clearway plane, extending from the end of the runway with an upward slope not exceeding 1.25 percent, above which no object nor any terrain protrudes. However,			

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
			threshold lights may protrude above the plane if their height above the end of the runway is 26 inches or less and if they are located to each side of the runway.			
			(2) For turbine engine powered airplanes certificated after September 30, 1958, but before August 30, 1959, an area beyond the takeoff runway extending no less than 300 feet on either side of the extended centerline of the runway, at an elevation no higher than the elevation of the end of the runway, clear of all fixed obstacles, and under the control of the airport authorities.			
		Climbout	*Climbout speed,* with respect to rotorcraft, means a referenced airspeed, which results in a flight path clear of the height-velocity envelope during initial climbout.	OK	N/A	
		Commercial Operator	*Commercial operator* means a person who, for compensation or hire, engages in the carriage by aircraft in air commerce of	Problematic - uses aircraft, air carrier, and contains reference to Pt. 375, also issue concerning foreign operators	*Re: commercial launch operator or commercial launch site operator is one who is performing a*	

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
			persons or property, other than as an air carrier or foreign air carrier or under the authority of Part 375 of this title. Where it is doubtful that an operation is for "compensation or hire", the test applied is whether the carriage by air is merely incidental to the person's other business or is, in itself, a major enterprise for profit.		*launch service, or launch site provider, for non-government customer.*	
		Controlled Airspace	*Controlled airspace* means airspace of defined dimensions within which air traffic control service is provided to IFR flights and to VFR flights in accordance with the airspace classification.	Problematic - need to address both air traffic control and airspace terms, need new classes of "space"	Actually according to the CONOPS for NAS (National Airspace System) in 2005, controlled airspace includes aerospace vehicle - the question is does FAA want to include the COLA/COMBO activity which includes the orbital phase space	
			Note: Controlled airspace is a generic term that covers Class A, Class B, Class C, Class D, and Class E airspace.			
		Controlled Firing Area	*Controlled Firing Area.* A controlled firing area is established to contain	Modify for aircraft (one place)	This has been identified as a launch hazard area	

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
			activities, which if not conducted in a controlled environment, would be hazardous to nonparticipating aircraft.			
		Crewmember	*Crewmember* means a person assigned to perform duty in an aircraft during flight time.	Modify for aircraft (one place)	Agree	
		Critical Altitude	*Critical altitude* means the maximum altitude at which, in standard atmosphere, it is possible to maintain, at a specified rotational speed, a specified power or a specified manifold pressure. Unless otherwise stated, the critical altitude is the maximum altitude at which it is possible to maintain, at the maximum continuous rotational speed, one of the following:	OK	N/A	
			(1) The maximum continuous power, in the case of engines for which this power rating is the same at sea level and at the rated altitude.			
			(2) The maximum continuous rated manifold pressure, in the case of engines, the maximum continuous power of which			

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
			is governed by a constant manifold pressure.			
		Critical Engine	*Critical engine* means the engine whose failure would most adversely affect the performance or handling qualities of an aircraft.	Modify for aircraft (one place)	N/A	
		Decision Height	*Decision height,* with respect to the operation of aircraft, means the height at which a decision must be made, during an ILS or PAR instrument approach, to either continue the approach or to execute a missed approach.	Modify for aircraft (one place)	This could go beyond approach, it could mean decision to reenter, some of the RLV concepts really only have one "approach" once they reenter	
		Equivalent Airspeed	*Equivalent airspeed* means the calibrated airspeed of an aircraft corrected for adiabatic compressible flow for the particular altitude. Equivalent airspeed is equal to calibrated airspeed in standard atmosphere at sea level.	Modify for aircraft (one place), will need to define corresponding terms for RLV operations (e.g. orbital velocity)	N/A -- there are many velocity terms required; orbital speed; earth-relative velocity; inertial velocity.	
		Extended over-water operation	*Extended over-water operation* means --	Modify for aircraft (one place), need to make a determination on applicability	N/A	
			(1) With respect to aircraft other than helicopters, an operation over water at a horizontal distance of more than 50 nautical miles from the nearest shoreline; and			

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
			(2) With respect to helicopters, an operation over water at a horizontal distance of more than 50 nautical miles from the nearest shoreline and more than 50 nautical miles from an off-shore heliport structure.			
		External Load	*External load* means a load that is carried, or extends, outside of the aircraft fuselage.	Modify for aircraft (one place)	N/A	
		External-load Attaching Means	*External-load attaching means* the structural components used to attach an external load to an aircraft, including external-load containers, the backup structure at the attachment points, and any quick-release device used to jettison the external load.	Modify for aircraft (one place)	N/A	
		Fireproof	*Fireproof* --	OK	OK	Heat shield is an additional term that needs to be here
			(1) With respect to materials and parts used to confine fire in a designated fire zone, means the capacity to withstand at least as well as steel in dimensions appropriate for the purpose for which they are used, the			

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
			heat produced when there is a severe fire of extended duration in that zone; and			
			(2) With respect to other materials and parts, means the capacity to withstand the heat associated with fire at least as well as steel in dimensions appropriate for the purpose for which they are used.			
		Fire Resistant	*Fire resistant* --	OK	OK	
			(1) With respect to sheet or structural members means the capacity to withstand the heat associated with fire at least as well as aluminum alloy in dimensions appropriate for the purpose for which they are used; and			
			(2) With respect to fluid-carrying lines, fluid system parts, wiring, air ducts, fittings, and power-plant controls, means the capacity to perform the intended functions under the heat and other conditions likely to occur when there is a fire at the place concerned.			
		Flame Resistant	*Flame resistant* means not susceptible to combustion	OK	OK	

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
			to the point of propagating a flame, beyond safe limits, after the ignition source is removed.			
		Flammable	*Flammable*, with respect to a fluid or gas, means susceptible to igniting readily or to exploding.	OK	OK	
		Flap Extended Speed	*Flap extended speed* means the highest speed permissible with wing flaps in a prescribed extended position.	OK	OK	
		Flash Resistant	*Flash resistant* means not susceptible to burning violently when ignited.	OK	OK	
		Flight crew Member	*Flight crewmember* means a pilot, flight engineer, or flight navigator assigned to duty in an aircraft during flight time.	Modify for aircraft (one place)	Agree	
		Flight Level	*Flight level* means a level of constant atmospheric pressure related to a reference datum of 29.92 inches of mercury. Each is stated in three digits that represent hundreds of feet. For example, flight level 250 represents a barometric altimeter indication of 25,000 feet; flight level 255, an indication of 25,500 feet.	OK	Really N/A since it is tied to "constant atmospheric pressure" the altitude or orbital altitude of the vehicle is a pure "position" parameter	
		Flight Plan	*Flight plan* means specified	Modify for aircraft (one place)	This needs to be	

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
			information, relating to the intended flight of an aircraft, that is filed orally or in writing with air traffic control.	and for air traffic control (one place)	"bound": ascent, on-orbit, re-entry, descent and landing (what phases are part of the "flight plan for AST)	
		Flight Time	*Flight time* means:	Modify for aircraft (two places)	Same comment as Flight plan	
			(1) Pilot time that commences when an aircraft moves under its own power for the purpose of flight and ends when the aircraft comes to rest after landing; or			
			(2) For a glider without self-launch capability, pilot time that commences when the glider is towed for the purpose of flight and ends when the glider comes to rest after landing.			
		Flight Visibility	*Flight visibility* means the average forward horizontal distance, from the cockpit of an aircraft in flight, at which prominent unlighted objects may be seen and identified by day and prominent lighted objects may be seen and identified by night.	Modify for aircraft (one place)	Agree	
		Foreign Air Carrier	*Foreign air carrier* means any person other than a citizen of the United States,	Problematic - need to address terms "air" carrier and "air" transportation	See comment on air carrier	

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
			who undertakes directly, by lease or other arrangement, to engage in air transportation.			
		Foreign Air Commerce	*Foreign air commerce* means the carriage by aircraft of persons or property for compensation or hire, or the carriage of mail by aircraft, or the operation or navigation of aircraft in the conduct or furtherance of a business or vocation, in commerce between a place in the United States and any place outside thereof; whether such commerce moves wholly by aircraft or partly by aircraft and partly by other forms of transportation.	Possibly OK since definition concludes with "other forms of transportation"	See comment on air commerce	
		Foreign air Transportation	*Foreign air transportation* means the carriage by aircraft of persons or property as a common carrier for compensation or hire, or the carriage of mail by aircraft, in commerce between a place in the United States and any place outside of the United States, whether that commerce moves wholly by	Possibly OK since definition concludes with "other forms of transportation"	See comment on air commerce	

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
			aircraft or partly by aircraft and partly by other forms of transportation.			
		Forward Wing	*Forward wing* means a forward lifting surface of a canard configuration or tandem-wing configuration airplane. The surface may be a fixed, movable, or variable geometry surface, with or without control surfaces.	Modify for aircraft (one place)	Agree	
		Glider	*Glider* means a heavier-than-air aircraft, that is supported in flight by the dynamic reaction of the air against its lifting surfaces and whose free flight does not depend principally on an engine.	OK	OK	
		Ground Visibility	*Ground visibility* means prevailing horizontal visibility near the earth's surface as reported by the United States National Weather Service or an accredited observer.	OK	OK	
		Go-around Power	*Go-around power or thrust setting* means the maximum allowable in-flight power or thrust setting identified in the performance data.	OK	Maximum load factor	
		Gyrodyne	*Gyrodyne* means a rotorcraft whose rotors are	OK	OK	

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
			normally engine-driven for takeoff, hovering, and landing, and for forward flight through part of its speed range, and whose means of propulsion, consisting usually of conventional propellers, is independent of the rotor system.			
		Gyroplane	*Gyroplane* means a rotorcraft whose rotors are not engine-driven, except for initial starting, but are made to rotate by action of the air when the rotorcraft is moving; and whose means of propulsion, consisting usually of conventional propellers, is independent of the rotor system.	OK	OK	
		Helicopter	*Helicopter* means a rotorcraft that, for its horizontal motion, depends principally on its engine-driven rotors.	OK	OK	
		Heliport	*Heliport* means an area of land, water, or structure used or intended to be used for the landing and takeoff of helicopters.	OK	OK	
		Idle Thrust	*Idle thrust* means the jet thrust obtained with the engine power control level	OK	OK	

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
			set at the stop for the least thrust position at which it can be placed.			
		IFR Conditions	*IFR conditions* means weather conditions below the minimum for flight under visual flight rules.	OK	OK	
		IFR Over-The-Top	*IFR over-the-top*, with respect to the operation of aircraft, means the operation of an aircraft over-the-top on an IFR flight plan when cleared by air traffic control to maintain, "VFR conditions" or "VFR conditions on top".	Modify for aircraft (one place)	Agree	
		Indicated airspeed	*Indicated airspeed* means the speed of an aircraft as shown on its pitot static airspeed indicator calibrated to reflect standard atmosphere adiabatic compressible flow at sea level uncorrected for airspeed system errors.	Problematic - tied to specific measurement techniques that only work in air	Agree	
		Instrument	*Instrument* means a device using an internal mechanism to show visually or aurally the attitude, altitude, or operation of an aircraft or aircraft part. It includes electronic devices for automatically controlling an aircraft in flight.	Modify for aircraft (two places)	Sensors (e.g. star sensors, battery current sensors)	

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
		Interstate Air Commerce	*Interstate air commerce* means the carriage by aircraft of persons or property for compensation or hire, or the carriage of mail by aircraft, or the operation or navigation of aircraft in the conduct or furtherance of a business or vocation, in commerce between a place in any State of the United States, or the District of Columbia, and a place in any other State of the United States, or the District of Columbia; or between places in the same State of the United States through the airspace over any place outside thereof; or between places in the same territory or possession of the United States, or the District of Columbia.	Modify for aircraft (three places) - unlikely applicability for RLVs	Agree	
		Interstate Air Transportation	*Interstate air transportation* means the carriage by aircraft of persons or property as a common carrier for compensation or hire, or the carriage of mail by aircraft in commerce:	Possibly OK since definition concludes with "other forms of transportation"	Agree	
			(1) Between a place in a State or the District of			

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
			Columbia and another place in another State or the District of Columbia;			
			(2) Between places in the same State through the airspace over any place outside that State; or			
			(3) Between places in the same possession of the United States;			
			Whether that commerce moves wholly by aircraft of partly by aircraft and partly by other forms of transportation.			
		Intrastate Air Transportation	*Intrastate air transportation* means the carriage of persons or property as a common carrier for compensation or hire, by turbojet-powered aircraft capable of carrying thirty or more persons, wholly within the same State of the United States.	Not Applicable	Agree	
		Kite	*Kite* means a framework, covered with paper, cloth, metal, or other material, intended to be flown at the end of a rope or cable, and having as its only support the force of the wind moving past its surfaces.	OK	OK	
		Landing Gear	*Landing gear extended*	Modify for aircraft (one place)	Agree	

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
		Extended Speed	*speed* means the maximum speed at which an aircraft can be safely flown with the landing gear extended.			
		Landing Gear Operating Speed	*Landing gear operating speed* means the maximum speed at which the landing gear can be safely extended or retracted.	OK	OK	
		Large Aircraft	*Large aircraft* means aircraft of more than 12,500 pounds, maximum certificated takeoff weight.	Define new term/classes for RLVs	Agree	
		Lighter-than-air aircraft	*Lighter-than-air aircraft* means aircraft that can rise and remain suspended by using contained gas weighing less than the air that is displaced by the gas.	OK	OK	
		Load Factor	*Load factor* means the ratio of a specified load to the total weight of the aircraft. The specified load is expressed in terms of any of the following: aerodynamic forces, inertia forces, or ground or water reactions.	Problematic - address use of term aircraft and determine if terms of expression need to be expanded	Confusing: the maximum load factor in the space launch systems refers to the maximum acceleration environment stated in g's and the payload mass fraction is the ratio of the mass of the "cargo" to the mass of the total launch vehicle at lift off	

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
		Long-range communication system (LRCS)	*Long-range communication system (LRCS).* A system that uses satellite relay, data link, high frequency, or another approved communication system, which extends beyond line of sight.	OK	Three types of communication architectures: TT&C (telemetry, tracking and commanding); data collection; and data relay	
		Long-range navigation system (LRNS)	*Long-range navigation system (LRNS).* An electronic navigation unit that is approved for use under instrument flight rules as a primary means of navigation, and has at least one source of navigational input, such as inertial navigation system, global positioning system, Omega/very low frequency, or Loran C.	OK	Types of navigation: (1) Ground tracking (2) TDRS tracking (3) Star tracking (4) GPS (5) Inertial Measurement Unit (IMU), etc.	
		Mach Number	*Mach number* means the ratio of true airspeed to the speed of sound.	OK	OK	
		Main Rotor	*Main rotor* means the rotor that supplies the principal lift to a rotorcraft.	OK	OK	
		Maintenance	*Maintenance* means inspection, overhaul, repair, preservation, and the replacement of parts, but excludes preventive maintenance.	OK	OK	

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
		Major Alteration	*Major alteration* means an alteration not listed in the aircraft, aircraft engine, or propeller specifications --	Modify for aircraft (two places)	Agree	
			(1) That might appreciably affect weight, balance, structural strength, performance, powerplant operation, flight characteristics, or other qualities affecting airworthiness; or			
			(2) That is not done according to accepted practices or cannot be done by elementary operations.			
		Major Repair	*Major repair* means a repair:	OK	Agree	
			(1) That, if improperly done, might appreciably affect weight, balance, structural strength, performance, powerplant operation, flight characteristics, or other qualities affecting airworthiness; or			
			(2) That is not done according to accepted practices or cannot be done by elementary operations.			
		Manifold Pressure	*Manifold pressure* means absolute pressure as measured at the appropriate point in the	OK, but implies a particular technology	OK	

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
			induction system and usually expressed in inches of mercury.			
		Maximum Speed for Stability Characteristics	*Maximum speed for stability characteristics, V*FC/MFC means a speed that may not be less than a speed midway between maximum operating limit speed (VMO/MMO) and demonstrated flight diving speed (VDF/MDF), except that, for altitudes where the Mach number is the limiting factor, MFC need not exceed the Mach number at which effective speed warning occurs.	Needs to be reviewed based on technology	N/A - too limiting	
		Medical Certificate	*Medical certificate* means acceptable evidence of physical fitness on a form prescribed by the Administrator.	OK	OK	
		Military Operations Area	*Military operations area.* A military operations area (MOA) is airspace established outside Class A airspace to separate or segregate certain non-hazardous military activities from IFR Traffic and to identify for VFR traffic where theses activities are conducted.	OK, but may need to be modified for airspace	OK	

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
		Minimum Descent Altitude	*Minimum descent altitude* means the lowest altitude, expressed in feet above mean sea level, to which descent is authorized on final approach or during circle-to-land maneuvering in execution of a standard instrument approach procedure, where no electronic glide slope is provided.	OK	OK	
		Minor Alteration	*Minor alteration* means an alteration other than a major alteration.	OK	OK	
		Minor Repair	*Minor repair* means a repair other than a major repair.	OK	OK	
		Navigable Airspace	*Navigable airspace* means airspace at and above the minimum flight altitudes prescribed by or under this chapter, including airspace needed for safe takeoff and landing.	OK, but may need to be modified for airspace	Agree	
		Night	*Night* means the time between the end of evening civil twilight and the beginning of morning civil twilight, as published in the American Air Almanac, converted to local time.	Need to understand relevance of American Air Almanac to RLV ops, suspect this is an outdated reference	Agree	
		Non-precision approach	*Non-precision approach procedure* means a standard instrument	OK	OK	

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
			approach procedure in which no electronic glide slope is provided.			
		Operate	*Operate,* with respect to aircraft, means use, cause to use or authorize to use aircraft, for the purpose (except as provided in §91.13 of this chapter) of air navigation including the piloting of aircraft, with or without the right of legal control (as owner, lessee, or otherwise).	Defined specifically for aircraft, will need a definition for aerospacecraft or the like	Agree	
		Operational Control	*Operational control*, with respect to a flight, means the exercise of authority over initiating, conducting or terminating a flight.	OK - but did we ever define the term "flight" as it applies to RLV?	See comment on flight plan	
		Overseas Air Commerce	*Overseas air commerce* means the carriage by aircraft of persons or property for compensation or hire, or the carriage of mail by aircraft, or the operation or navigation of aircraft in the conduct or furtherance of a business or vocation, in commerce between a place in any State of the United States, or the District of Columbia, and any place in a territory or possession of the United	Modify for aircraft (one place)	Agree	

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
			States; or between a place in a territory or possession of the United States, and a place in any other territory or possession of the United States.			
		Overseas Air Transportation	*Overseas air transportation* means the carriage by aircraft of persons or property as a common carrier for compensation or hire, or the carriage of mail by aircraft, in commerce:	Probably OK since ends with phrase "partly by other forms of transportation"	Change to include aerospace vehicle or space transportation vehicle	
			(1) Between a place in a State or the District of Columbia and a place in a possession of the United States; or			
			(2) Between a place in a possession of the United States and a place in another possession of the United States; whether that commerce moves wholly by aircraft or partly by aircraft and partly by other forms of transportation.			
		Over-the-top	*Over-the-top* means above the layer of clouds or other obscuring phenomena forming the ceiling.	OK	OK	
		Parachute	*Parachute* means a device used or intended to be used to retard the fall of a body or	OK - talks of "through air", is there an additional term for crew escape mechanisms	None of the crew escape concepts are for exoatmospheric	

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
			object through the air.	exoatmosphere?	egress now; however, that is on the horizon (e.g. the emergency return capability for space station inhabitants)	
		Person	*Person* means an individual, firm, partnership, corporation, company, association, joint-stock association, or governmental entity. It includes a trustee, receiver, assignee, or similar representative of any of them.	OK	OK	
		Pilotage	*Pilotage* means navigation by visual reference to landmarks.	OK	OK	
		Pilot in command	*Pilot in command* means the person who:	OK	Commander	
			(1) Has final authority and responsibility for the operation and safety of the flight;			
			(2) Has been designated as pilot in command before or during the flight; and			
			(3) Holds the appropriate category, class, and type rating, if appropriate, for the conduct of the flight.			

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
		Pitch Setting	*Pitch setting* means the propeller blade setting as determined by the blade angle measured in a manner, and at a radius, specified by the instruction manual for the propeller.	OK	OK However, would like to see definitions for pitch, roll, and yaw added as separate terms. For example, pitch refers to the angle between the axis of the vehicle and the local horizontal.	
		Positive Control	*Positive control* means control of all air traffic, within designated airspace, by air traffic control.	Problematic - defined in terms of "airspace" and "air traffic control"	Will positive control be extended to on-orbit, reentry, ….? See flight plan comment --	
		Powered-lift	*Powered-lift* means a heavier-than-air aircraft capable of vertical takeoff, vertical landing, and low speed flight that depends principally on engine-driven lift devices or engine thrust for lift during these flight regimes and on nonrotating airfoil(s) for lift during horizontal flight.	Problematic - defined in terms of vertical takeoff/vertical landing only; also contains references to specific types of engines.	Agree	
		Precision approach procedure	*Precision approach procedure* means a standard instrument approach procedure in which an electronic glide slope is provided, such as ILS and PAR.	OK	OK	

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
		Preventative maintenance	*Preventive maintenance* means simple or minor preservation operations and the replacement of small standard parts not involving complex assembly operations.	OK	OK	
		Prohibited area	*Prohibited area.* A prohibited area is airspace designated under part 73 within which no person may operate an aircraft without the permission of the using agency.	Modify for aircraft (one place); also contains a reference to Pt. 73	Agree	
		Propeller	*Propeller* means a device for propelling an aircraft that has blades on an engine-driven shaft and that, when rotated, produces by its action on the air, a thrust approximately perpendicular to its plane of rotation. It includes control components normally supplied by its manufacturer, but does not include main and auxiliary rotors or rotating airfoils of engines.	OK	OK	
		Public Aircraft	*Public aircraft* means an aircraft used only for the United States Government, or owned and operated (except for commercial	Multiple occurrences of aircraft, also need to review with respect to Air Force Space Command activities		

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
			purposes), or exclusively leased for at least 90 continuous days, by a government (except the United States Government), including a State, the District of Columbia, or a territory or possession of the United States, or political subdivision of that government; but does not include a government-owned aircraft transporting property for commercial purposes, or transporting passengers other than transporting (for other than commercial purposes) crewmembers or other persons aboard the aircraft whose presence is required to perform, or is associated with the performance of, a governmental function such as firefighting, search and rescue, law enforcement, aeronautical research, or biological or geological resource management; or transporting (for other than commercial purposes) persons aboard the aircraft if the aircraft is operated by the Armed Forces or an			

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
			intelligence agency of the United States. An aircraft described in the preceding sentence shall, notwithstanding any limitation relating to use of the aircraft for commercial purposes, be considered to be a public aircraft for the purposes of this Chapter without regard to whether the aircraft is operated by a unit of government on behalf of another unit of government, pursuant to a cost reimbursement Agreement between such units of government, if the unit of government on whose behalf the operation is conducted certifies to the Administrator of the Federal Aviation Administration that the operation was necessary to respond to a significant and imminent threat to life or property (including natural resources) and that no service by a private operator was reasonably available to meet the threat.			
		Rated 30-second OEI	*Rated 30-second OEI power,* with respect to	OK - rotorcraft turbine engines specific definition	Agree	

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
		Power	rotorcraft turbine engines, means the approved brake horsepower developed under static conditions at specified altitudes and temperatures within the operating limitations established for the engine under part 33 of this chapter, for continued one-flight operation after the failure of one engine in multiengine rotorcraft, limited to three periods of use no longer than 30 seconds each in any one flight, and followed by mandatory inspection and prescribed maintenance action.			
		Rated 2-Minute OEI Power	*Rated 2-minute OEI power,* with respect to rotorcraft turbine engines, means the approved brake horsepower developed under static conditions at specified altitudes and temperatures within the operating limitations established for the engine under part 33 of this chapter, for continued one-flight operation after the failure of one engine in multiengine rotorcraft,	OK - rotorcraft turbine engines specific definition	Agree	

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
			limited to three periods of use no longer than 2 minutes each in any one flight, and followed by mandatory inspection and prescribed maintenance action.			
		Rated Continuous OEI Power	*Rated continuous OEI power,* with respect to rotorcraft turbine engines, means the approved brake horsepower developed under static conditions at specified altitudes and temperatures within the operating limitations established for the engine under Part 33 of this chapter, and limited in use to the time required to complete the flight after the failure of one engine of a multiengine rotorcraft.	OK - rotorcraft turbine engines specific definition	Agree	
		Rated Maximum Continuous Augmented Thrust	*Rated maximum continuous augmented thrust*, with respect to turbojet engine type certification, means the approved jet thrust that is developed statically or in flight, in standard atmosphere at a specified altitude, with fluid injection or with the burning of fuel in a separate combustion	OK - turbojet engine type specific definition	Agree	

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
			chamber, within the engine operating limitations established under Part 33 of this chapter, and approved for unrestricted periods of use.			
		Rated Maximum Continuous Power	*Rated maximum continuous power,* with respect to reciprocating, turbopropeller, and turboshaft engines, means the approved brake horsepower that is developed statically or in flight, in standard atmosphere at a specified altitude, within the engine operating limitations established under Part 33, and approved for unrestricted periods of use.	OK - reciprocating, turbo propeller, and turbo shaft specific definition	Agree	
		Rated Maximum Continuous Thrust	*Rated maximum continuous thrust*, with respect to turbojet engine type certification, means the approved jet thrust that is developed statically or in flight, in standard atmosphere at a specified altitude, without fluid injection and without the burning of fuel in a separate combustion chamber, within the engine operating	OK - turbojet engine type specific definition	Agree	

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
			limitations established under Part 33 of this chapter, and approved for unrestricted periods of use.			
		Rated Takeoff Augmented Thrust	*Rated takeoff augmented thrust*, with respect to turbojet engine type certification, means the approved jet thrust that is developed statically under standard sea level conditions, with fluid injection or with the burning of fuel in a separate combustion chamber, within the engine operating limitations established under Part 33 of this chapter, and limited in use to periods of not over 5 minutes for takeoff operation.	OK - turbojet engine type specific definition	Agree	
		Rated Takeoff Power	*Rated takeoff power*, with respect to reciprocating, turbopropeller, and turboshaft engine type certification, means the approved brake horsepower that is developed statically under standard sea level conditions, within the engine operating limitations established under Part 33, and limited in use to periods	OK - reciprocating, turbopropeller, and turboshaft specific definition	Agree	

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
			of not over 5 minutes for takeoff operation.			
		Rated Takeoff Thrust	*Rated takeoff thrust*, with respect to turbojet engine type certification, means the approved jet thrust that is developed statically under standard sea level conditions, without fluid injection and without the burning of fuel in a separate combustion chamber, within the engine operating limitations established under Part 33 of this chapter, and limited in use to periods of not over 5 minutes for takeoff operation.	OK - turbojet engine type specific definition	Agree	
		Rated 30-minute OEI Power	*Rated 30-minute OEI power,* with respect to rotorcraft turbine engines, means the approved brake horsepower developed under static conditions at specified altitudes and temperatures within the operating limitations established for the engine under Part 33 of this chapter, and limited in use to a period of not more than 30 minutes after the failure of one engine of a	OK - rotorcraft turbine engines specific definition	Agree	

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
			multiengine rotorcraft.			
		Rated 2 1/2-minute OEI Power	*Rated 2 1/2-minute OEI power,* with respect to rotorcraft turbine engines, means the approved brake horsepower developed under static conditions at specified altitudes and temperatures within the operating limitations established for the engine under Part 33 of this chapter, and limited in use to a period of not more than 2 1/2 minutes after the failure of one engine of a multiengine rotorcraft.	OK - rotorcraft turbine engines specific definition	Agree	
		Rating	*Rating* means a statement that, as a part of a certificate, sets forth special conditions, privileges, or limitations.	OK	OK	
		Reporting Point	*Reporting point* means a geographical location in relation to which the position of an aircraft is reported.	Modify for aircraft (one place)	Agree – However, Telemetry, Tracking, and Control provides a different model for this.	
		Restricted Area	*Restricted area.* A restricted area is airspace designated under Part 73 within which the flight of aircraft, while not wholly prohibited, is subject to restriction.	Modify for aircraft (one place); also contains a reference to Pt. 73	Agree	

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
		RNAV waypoint (W/P)	*RNAV way point (W/P)* means a predetermined geographical position used for route or instrument approach definition or progress reporting purposes that is defined relative to a VORTAC station position.	OK	OK	
		Rocket	*Rocket* means an aircraft propelled by ejected expanding gases generated in the engine from self-contained propellants and not dependent on the intake of outside substances. It includes any part that becomes separated during the operation.	Modify for aircraft (one place)	A rocket is a flying vehicle propelled by a rocket engine where a rocket engine is defined as a reaction engine that contains within itself, or carries along with itself, all the substances necessary for its operation or the consumption or combustion to its fuel, not requiring intake of any outside substance and hence capable of operation in outer space.	
		Rotorcraft	*Rotorcraft* means a heavier-than-air aircraft that depends principally for its support in flight on the lift generated by one or more rotors.	OK	OK	
		Rotorcraft-load Combination	*Rotorcraft-load combination* means the combination of a	OK	OK	

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
			rotorcraft and an external-load, including the external-load attaching means. Rotorcraft-load combinations are designated as Class A, Class B, Class C, and Class D, as follows:			
		Class A rotorcraft-load Combination	(1) *Class A rotorcraft-load combination* means one in which the external load cannot move freely, cannot be jettisoned, and does not extend below the landing gear.	OK	OK	
		Class B rotorcraft-load Combination	(2) *Class B rotorcraft-load combination* means one in which the external load is jettisonable and is lifted free of land or water during the rotorcraft operation.	OK	OK	
		Class C rotorcraft-load Combination	(3) *Class C rotorcraft-load combination* means one in which the external load is jettisonable and remains in contact with land or water during the rotorcraft operation.	OK	OK	
		Class D rotorcraft-load Combination	(4) *Class D rotorcraft-load combination* means one in which the external-load is other than a Class A, B, or C and has been specifically approved by the	OK	OK	

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
			Administrator for that operation.			
		Route Segment	*Route segment* means a part of a route. Each end of that part is identified by:	OK	OK	
			(1) A continental or insular geographical location; or		OK	
			(2) A point at which a definite radio fix can be established.		OK	
		Sea Level Engine	*Sea level engine* means a reciprocating aircraft engine having a rated takeoff power that is producible only at sea level.	OK	OK	
		Second In Command	*Second in command* means a pilot who is designated to be second in command of an aircraft during flight time.	Modify for aircraft (one place)	Agree	
		Show	*Show*, unless the context otherwise requires, means to show to the satisfaction of the Administrator.	OK	OK	
		Small Aircraft	*Small aircraft* means aircraft of 12,500 pounds or less, maximum certificated takeoff weight.	Will probably need a corresponding definition for a small aero-spacecraft	N/A	
		Special VFR Conditions	*Special VFR conditions* mean meteorological conditions that are less than those required for basic VFR flight in controlled airspace and in which some	Modify for aircraft (one place) and airspace (one place)	Agree	

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
			aircraft are permitted flight under visual flight rules.			
		Special VFR Operations	*'Special VFR operations'* means aircraft operating in accordance with clearances within controlled airspace in meteorological conditions less than the basic VFR weather minima. Such operations must be requested by the pilot and approved by ATC.	Modify for aircraft (one place) and airspace (one place)	Agree	
		Standard Atmosphere	*Standard atmosphere* means the atmosphere defined in U.S. Standard Atmosphere, 1962 (Geopotential altitude tables).	OK	OK – however, would expect to use latest available.	
		Stopway	*Stopway* means an area beyond the takeoff runway, no less wide than the runway and centered upon the extended centerline of the runway, able to support the airplane during an aborted takeoff, without causing structural damage to the airplane, and designated by the airport authorities for use in decelerating the airplane during an aborted takeoff.	Problematic – relates to only those RLV's that operate like airplanes. Modify for airplane (three places) and airport (one place)	Agree	
		Takeoff Power	*Takeoff power:*	Defined for both reciprocating and turbine engines	Applicable; however the definition itself	Note: take off is applicable for both

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
					needs to be revisited for RLV engine designs	horizontal and vertical launches
			(1) With respect to reciprocating engines, means the brake horsepower that is developed under standard sea level conditions, and under the maximum conditions of crankshaft rotational speed and engine manifold pressure approved for the normal takeoff, and limited in continuous use to the period of time shown in the approved engine specification; and			
			(2) With respect to turbine engines, means the brake horsepower that is developed under static conditions at a specified altitude and atmospheric temperature, and under the maximum conditions of rotor shaft rotational speed and gas temperature approved for the normal takeoff, and limited in continuous use to the period of time shown in the approved engine specification.			

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
		Takeoff Safety Speed	*Takeoff safety speed* means a referenced airspeed obtained after lift-off at which the required one-engine-inoperative climb performance can be achieved.	Problematic – does not reflect RLV flight profile	Agree	
		Takeoff Thrust	*Takeoff thrust*, with respect to turbine engines, means the jet thrust that is developed under static conditions at a specific altitude and atmospheric temperature under the maximum conditions of rotorshaft rotational speed and gas temperature approved for the normal takeoff, and limited in continuous use to the period of time shown in the approved engine specification.	OK - defined with respect to turbine engines only	Needs to be expanded for additional engine types	
		Tandem Wing Configuration	*Tandem wing configuration* means a configuration having two wings of similar span, mounted in tandem.	OK	OK	

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
		TCAS I	*TCAS I* means a TCAS that utilizes interrogations of, and replies from, airborne radar beacon transponders and provides traffic advisories to the pilot.	OK	*TCAS,* Traffic Alert and Collision Avoidance System. -- would it be expanded to include aerospace vehicles? Also, would there be a similar system for COLA/COMBO?	
		TCAS II	*TCAS II* means a TCAS that utilizes interrogations of, and replies from airborne radar beacon transponders and provides traffic advisories and resolution advisories in the vertical plane.	OK		
		TCAS III	*TCAS III* means a TCAS that utilizes interrogation of, and replies from, airborne radar beacon transponders and provides traffic advisories and resolution advisories in the vertical and horizontal planes to the pilot.	OK		
		Time In Service	*Time in service*, with respect to maintenance time records, means the time from the moment an aircraft leaves the surface of the earth until it touches it at the next point of landing.	Modify for aircraft (one place), maintenance-related definition	Agree	

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
		True Airspeed	*True airspeed* means the airspeed of an aircraft relative to undisturbed air. True airspeed is equal to equivalent airspeed multiplied by (ρ0/ρ) 1/2.	Modify for aircraft (one place)	Agree	
		Traffic Pattern	*Traffic pattern* means the traffic flow that is prescribed for aircraft landing at, taxiing on, or taking off from, an airport.	Modify for aircraft (one place) and airport (one place)	Agree	
		Type	*Type:*	Modify for aircraft (three places)	Agree	
			(1) As used with respect to the certification, ratings, privileges, and limitations of airmen, means a specific make and basic model of aircraft, including modifications thereto that do not change its handling or flight characteristics. Examples include: DC-7, 1049, and F-27; and			
			(2) As used with respect to the certification of aircraft, means those aircraft, which are similar in design. Examples include: DC-7 and DC-7C; 1049G and 1049H; and F-27 and F-27F.			
			(3) As used with respect to the certification of aircraft engines means those			

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
			engines, which are similar in design. For example, JT8D and JT8D-7 are engines of the same type, and JT9D-3A and JT9D-7 are engines of the same type.			
		United States	*United States*, in a geographical sense, means (1) the States, the District of Columbia, Puerto Rico, and the possessions, including the territorial waters, and (2) the airspace of those areas.	OK	OK	
		Unite States Air Carrier	*United States air carrier* means a citizen of the United States who undertakes directly by lease, or other arrangement, to engage in air transportation.	OK - but may want to address use of term "air"	Agree	
		VFR Over-The-Top	*VFR over-the-top*, with respect to the operation of aircraft, means the operation of an aircraft over-the-top under VFR when it is not being operated on an IFR flight plan.	Modify for aircraft (one place)	Agree	
		Warning Area	*Warning area.* A warning area is airspace of defined dimensions, extending from 3 nautical miles outward from the coast of the United	Modify for aircraft (one place) and airspace (one place)	Agree	

Section	Title	Term	14 CFR 1 Definition	Notes/RLV Questions (Aviation perspective)	Notes/RLV Questions (RLV Perspective)	Comments
			States that contains activity that may be hazardous to nonparticipating aircraft. The purpose of such warning areas is to warn nonparticipating pilots of the potential danger. A warning area may be located over domestic or international waters or both.			
		Winglet of Tip Fin	*Winglet or tip fin* means an out-of-plane surface extending from a lifting surface. The surface may or may not have control surfaces.	OK	OK	

The second half of 14 CFR 1 is a list of acronyms used in the aviation FARs. A review of a number of RLV-related documents including the lists from NASA associated with the Space Shuttle and various lists from the DC-X program were scanned for acronyms with different meanings from those in this FAR. Only a small number of conflicts were identified.

Section 1.2		Acronym	Meaning	Noted Conflicts
		AGL	*AGL* means above ground level.	
		ALS	*ALS* means approach light system.	
		ASR	*ASR* means airport surveillance radar.	
		ATC	*ATC* means air traffic control.	
		CAS	*CAS* means calibrated airspeed.	
		CAT II	*CAT II* means Category II.	

Section 1.2		Acronym	Meaning	Noted Conflicts
		CONSOL of CONSOLAN	*CONSOL* or *CONSOLAN* means a kind of low or medium frequency long-range navigational aid.	
		DH	*DH* means decision height.	
		DME	*DME* means distance-measuring equipment compatible with TACAN.	
		EAS	*EAS* means equivalent airspeed.	
		FAA	*FAA* means Federal Aviation Administration.	
		FM	*FM* means fan marker.	FM means Flight Manager (DC-X) Traditional meaning of Frequency Modulation
		GS	*GS* means glide slope.	
		HIRL	*HIRL* means high-intensity runway light system.	
		IAS	*IAS* means indicated airspeed.	
		ICAO	*ICAO* means International Civil Aviation Organization.	
		IFR	*IFR* means instrument flight rules.	
		ILS	*ILS* means instrument landing system.	
		IM	*IM* means ILS inner marker.	
		INT	*INT* means intersection.	
		LDA	*LDA* means localizer-type directional aid.	
		LFR	*LFR* means low-frequency radio range.	
		LMM	*LMM* means compass locator at middle marker.	
		LOC	*LOC* means ILS localizer.	
		LOM	*LOM* means compass	

Section 1.2		Acronym	Meaning	Noted Conflicts
			locator at outer marker.	
		M	*M* means mach number.	
		MAA	*MAA* means maximum authorized IFR altitude.	
		MALS	*MALS* means medium intensity approach light system.	
		MALSR	*MALSR* means medium intensity approach light system with runway alignment indicator lights.	
		MCA	*MCA* means minimum crossing altitude.	
		MDA	*MDA* means minimum descent altitude.	MDA means Main Drive Amplifier (Shuttle)
		MEA	*MEA* means minimum en route IFR altitude.	
		MM	*MM* means ILS middle marker.	
		MOCA	*MOCA* means minimum obstruction clearance altitude.	
		MRA	*MRA* means minimum reception altitude.	
		MSL	*MSL* means mean sea level.	
		NDB (ADF)	*NDB(ADF)* means non-directional beacon (automatic direction finder).	
		NOPT	*NOPT* means no procedure turn required.	
		OEI	*OEI* means one engine inoperative.	
		OM	*OM* means ILS outer marker.	

Section 1.2		Acronym	Meaning	Noted Conflicts
		PAR	*PAR* means precision approach radar.	
		RAIL	*RAIL* means runway alignment indicator light system.	
		RBN	*RBN* means radio beacon.	
		RCLM	*RCLM* means runway centerline marking.	
		RCLS	*RCLS* means runway centerline light system.	
		REIL	*REIL* means runway end identification lights.	
		RR	'*RR*" means low or medium frequency radio range station.	
		RVR	*RVR* means runway visual range as measured in the touchdown zone area.	
		SALS	*SALS* means short approach light system.	
		SSALS	*SSALS* means simplified short approach light system.	
		SSALSR	*SSALSR* means simplified short approach light system with runway alignment indicator lights.	
		TACAN	*TACAN* means ultra-high frequency tactical air navigational aid.	
		TAS	*TAS* means true airspeed.	
		TCAS	*TCAS* means a traffic alert and collision avoidance system.	
		TDZL	*TDZL* means touchdown zone lights.	

Section 1.2		Acronym	Meaning	Noted Conflicts
		TVOR	*TVOR* means very high frequency terminal omni range station.	
		VA	*V*A means design-maneuvering speed.	
		VB	*V*B means design speed for maximum gust intensity.	
		VC	*V*C means design cruising speed.	
		VD	*V*D means design diving speed.	
		VDF/MDF	*V*DF/*M*DF means demonstrated flight diving speed.	
		VEF	*V*EF means the speed at which the critical engine is assumed to fail during takeoff.	
		VF	*V*F means design flap speed.	
		VFC/MFC	*V*FC/*M*FC means maximum speed for stability characteristics.	
		VFE	*V*FE means maximum flap extended speed.	
		VH	*V*H means maximum speed in level flight with maximum continuous power.	
		VLE	*V*LE means maximum landing gear extended speed.	
		VLO	*V*LO means maximum landing gear operating speed.	
		VLOF	*V*LOF means lift-off speed.	

Section 1.2		Acronym	Meaning	Noted Conflicts
		VMC	*V*MC means minimum control speed with the critical engine inoperative.	
		VMO/MMO	*V*MO/*M*MO means maximum operating limit speed.	
		VMU	*V*MU means minimum unstick speed.	
		VNE	*V*NE means never-exceed speed.	
		VNO	*V*NO means maximum structural cruising speed.	
		VR	*V*R means rotation speed.	
		VS	*V*S means the stalling speed or the minimum steady flight speed at which the airplane is controllable.	
		VS0	*V*S0 means the stalling speed or the minimum steady flight speed in the landing configuration.	
		VS1	*V*S1 means the stalling speed or the minimum steady flight speed obtained in a specific configuration.	
		VTOSS	VTOSS means takeoff safety speed for Category A rotorcraft.	
		VX	*V*X means speed for best angle of climb.	
		VY	*V*Y means speed for best rate of climb.	
		V1	*V*1 means the maximum speed in the takeoff at which the pilot must take	

Section 1.2		Acronym	Meaning	Noted Conflicts
			the first action (e.g., apply brakes, reduce thrust, deploy speed brakes) to stop the airplane within the accelerate-stop distance. V1 also means the minimum speed in the takeoff, following a failure of the critical engine at VEF, at which the pilot can continue the takeoff and achieve the required height above the takeoff surface within the takeoff distance.	
		V2	*V*2 means takeoff safety speed.	
		V2 min	*V*2 min means minimum takeoff safety speed.	
		VFR	*VFR* means visual flight rules.	
		VHF	*VHF* means very high frequency.	
		VOR	*VOR* means very high frequency omni range station.	
		VORTAC	*VORTAC* means collocated VOR and TACAN.	

14 CFR 11 General Rulemaking Procedures

Effective Date	05/17/02
Contents and review purpose	This FAR part contains general rulemaking procedures. This FAR was reviewed for applicability in the RLV domain.

Subpart A – Rulemaking Procedures

Section	Title	Summary of Part	Notes/RLV Questions
11.1	To What Does This Part Apply?	Scope Statement - all public rulemaking efforts by the FAA	Included
		Definition Of Terms	
11.3	What is an Advance Notice of Proposed Rulemaking (ANPRM?)	Initial public notice that a rule is going to be changed or a new rule promulgated	
11.5	What is an NPRM?	Public notice of actual changes with supporting rationale	
11.7	What is Supplemental NPRM?	2nd round of public comment due to change in direction or extent of suggested mods from first NPRM	
11.9	What is a Final Rule?	Final text plus government response to NPRM commenter's; effective date	
11.11	What is a Final Rule with Request for Comments?	Done only when rule issued without ANPRM or NPRM for reasons of impracticable, unnecessary, or contrary to public interest; also called immediately adopted final rule; comments only if FAA believes something of interest may surface	
11.13	What is a Direct Final Rule?	Reserved for non-controversial items	
11.15	What is a Petition for Exemption?	Request for relief from current regulation	
11.17	What is a Petition for Rulemaking?	Request to adopt, amend, or repeal a reg.	
11.19	What is a Special Condition?	Regulation unique to particular aircraft design, because novel or unusual design feature is not addressed in current regulations.	Model for most RLVs initially
		General	
11.21	What are most common FAA Rulemaking Activities by FAA under	CFR Rules; ADs issued under Pt 39, Airspace Designations	

Section	Title	Summary of Part	Notes/RLV Questions
	Administrative Procedures Act (APA)?		
11.23	Does FAA Follow Same Procedures in Issuing All Types of Rules?	Generally yes, minor differences only as noted elsewhere in FARs	
11.25	How Does the FAA Issue Rules?	Per APA; notification via Federal Register or to each effected party directly; Each rulemaking document generally contains topic, legal authority to make rule, how people may engage in process, POC, public meeting details, docket number, and Regulation Identification Number (RIN)	
11.27	Are there other ways of collecting inputs prior to NPRM?	Yes: Through Federal Advisory Committees; ARAC specifically mentioned	Assume all RLV inputs would be via COMSTAC
11.29	May FAA Change rules without ANPRM or NPRM?	Yes in two cases: emergency and non-controversial changes	
11.31	How Does FAA process Direct Final Rules?	Publish with 60 day comment window; if adverse comment received, rule may be withdrawn, comment incorporated and new direct rule issued, or conversion to formal NPRM process; Suggestions to change additional rules or frivolous comments not considered adverse	
11.33	How can I Track FAA Rulemaking Activity?	Docket number or RIN	
11.35	Does FAA include Sensitive Security or Proprietary info in Docket Management System (DMS)?	Such material should not be submitted; FAA does scan for such info and makes every attempt to remove; Any requests for access handle via FOIA	
11.37	Where can I find info about an AD, Airspace Designation, or petition handled in a region?	Every attempt made to fully disclose via electronic docket (Federal Register); if don't find what you're looking for, contact POC in Federal Register for that docket number	
11.38	What Public Comment Procedures Does FAA follow for Special Conditions?	Not required by APA, but FAA does publish Special Conditions; two circumstances where prior publication won't happen - if it delays delivery of aircraft and if previous opportunities for comment have been provided	
11.39	How may I participate in FAA	Three ways: file written comments against	

Section	Title	Summary of Part	Notes/RLV Questions
	Rulemaking activities?	ANPRM, NPRM, SNPRM or final rule; request public meeting or attend already called public meeting; ask for repeal, amendment, or adoption of regulation	
11.40	Can I get more Info about a Rulemaking?	Contact POC listed in Preamble	
Written Comments			
11.41	Who may file comments?	Anyone	
11.43	What Info must I put in my written comments?	Must be in English and contain docket number, your contact info, comment, and supporting data for basis of comment	
11.45	Where and when do I file my comments?	By stated deadline and per stated instructions associated with Docket Management System (DMS)	
11.47	May I ask for more time to file comments?	Yes, but extension must be deemed to be in Public interest; extension request must contain docket number, reason for extension, sent to proper place, and must be received at least ten days prior to end of comment period.	
Public Meetings And Other Proceedings			
11.51	May I request a Public meeting?	Yes, request must be made in writing and no later than 30 days after rulemaking notice	
11.53	What takes place at a public meeting?	Non-adversarial and fact-finding in nature	
Petitions For Rulemaking And For Exemptions			
11.61	May I ask FAA to Adopt, amend, or repeal a regulation or grant relief from the requirements of a current regulation?	Yes to all for Title 14 regulations	
11.63	How and to Whom do I submit my petition for rulemaking or petition for exemption?	Via the DMS, other means may be designated in future. Must be submitted at least 120 days before needed	Should there be a different system initially for RLVs?
11.71	What information must I include in my Petition for rulemaking?	Contact info Rule or part of rule in question Explanation of why need change and why change	

Section	Title	Summary of Part	Notes/RLV Questions
		is in public interest supporting information including any relevant specific facts or circumstances; FAA may require additional data concerning cost/benefit, affect on small business, effect on record keeping, and effect on environment (natural and social)	
11.73	How do FAA process petitions for rulemaking?	Will provide decision in writing - decision may include initiation of an ANPRM or NPRM activity - in this case, we consider safety and security concerns raised, priority of matter WRT to other items being worked by FAA, resources available to address issue; issue may also be handed to ARAC; if issue has merit but cannot be addressed at this time, the petition will be dismissed, but the issue held in a database for future consideration	
11.75	Does FAA invite public comment on petitions for rulemaking?	Generally, no	
11.77	Is there any additional information I must include in my petition for designating airspace?	Everything in 11.71 plus location and description of airspace, description of activity (type, volume, duration, time, and place), any ATM facilities that will be made available for the space is the designation is granted, and the entity to contact for access to the airspace when it is not in use for requested purpose.	
11.81	What information must I include in my Petition for exemption?	Contact info rule from which exemption is sought extent of relief sought and why such an exemption is in the public interest How such an exemption would not adversely affect safety and a summary to be included in the FEDERAL REGISTER	
11.83	How can I operate under an exemption outside the United States?	Need to petition for exemption at time original request is made; outside the US ICAO rules	Has potential large impact for RLV ops since they will obviously

Section	Title	Summary of Part	Notes/RLV Questions
		prevail - sovereign states may still deny exemption	traverse other country's airspace.
11.85	Does FAA invite public comment on petitions for exemption?	Yes - info includes docket number, petitioner, rule, petitioner's providing summary, and request for comment	
11.87	Are there circumstances in which FAA may decide to not publish a summary of my petition for exemption?	Yes - considerations include: is precedent involved, has such an exemption been granted before, affect of delay, and whether petition was filed on time	
11.89	How much time do I have to submit comments to FAA on a petition for exemption?	Specified in Fed Reg, typically 20 days	
11.91	How does FAA inform me of its decision on my petition for exemption?	Notify in writing and summary in Fed. Reg.	
11.101	May I ask FAA to reconsider my petition for rulemaking or petition for exemption if denied?	Yes - within 60 days of denial - provide significant additional facts, or point out important factual error in FAA response, or indicate your belief that FAA misinterpreted law, reg, or precedent	
Subpart B - Paperwork Reduction Act Control Numbers			
11.201	OMB assigned numbers		New #s will be needed for 400-series
App 1 to Part 11	Oral Communications With the Public During Rulemaking	Addresses Ex Parte communications in detail	

14 CFR 13 General Rulemaking Procedures

Effective Date	05/17/02
Contents and review purpose	This FAR part contains general rulemaking, handling of violations, formal complaint and legal procedures. This FAR was reviewed for applicability in the RLV domain.

Subpart A - Investigative Procedures

Section	Title	Summary of Part	Notes/RLV Questions
13.1	Reports Of Violations	If you know of violation, you should report it to FAA. They will determine further investigative actions necessary.	
13.3	Investigations (General)	Administrator may hold hearings, issue subpoenas, require production of documents, records, and property, take evidence, and depositions.	
13.5	Formal Complaints	Outlines formal complaint process - including how to file, information that must be provided, and the actions taken to resolve the complaint. Note that complaints against FAA employees are not covered (designees appear to be covered - non-FAA-badge personnel.	
13.7	Records, Documents, And Reports	All documents, records, and reports required to be maintained by the FARs may be used in any investigation and any subsequent civil penalty action, certificate action, or other legal proceeding	
Subpart B - Administrative Actions			
13.11	Administrative Disposition Of Certain Violations	If legal action is deemed unnecessary, field offices may issue warnings or "Letters of Correction". Failure to comply with an Agreed action in a Letter of Correction may still result in legal enforcement action.	

Section	Title	Summary of Part	Notes/RLV Questions
Subpart C - Legal Enforcement Actions			
13.13	Consent Orders	May be issued if both parties Agree to a settlement and admission of "jurisdictional" facts - waives any further proceedings and hearings	
13.15	Civil Penalties: Excess Of $50K, Seizure Or Aircraft, Injunctive Relief	States ability to fine based on violations to various statutes and ability to evaluate and accept compromise settlements. Non-Agreed settlements can be referred to Attorney General for further action.	
13.16	Civil Penalties: Less Than $50K; Hazardous Materials Transportation Act	Specific details of filing a report of violation to Hazardous Materials Act including assignment of penalties	
13.17	Seizure Of Aircraft	Aircraft may be seized if subject to a civil penalty; owner becomes liable for costs associated with seizing, storing, and maintaining aircraft in addition to penalty	
13.19	Certificate Action	Administrator may reinsert a certificated aircraft or credentials of a certificated airman and amend, suspend, or revoke certificate. Notice of proposed certificate action must be provided and 15 days for response given which may include an intent to appeal to the NTSB	
13.2	Orders Of Compliance, Cease And Desist Orders, Orders Of Denial, And Other Orders	Unless emergency, notice of proposed actions must be given - remainder of part specifies notice periods for various action types, appeals process, and ultimate results of lost appeals.	
13.21	Military Personnel	If FAA rules are broken by military personnel in conduct of their job, matter is referred to military authority for action	

Section	Title	Summary of Part	Notes/RLV Questions
13.23	Criminal Penalties	Certain portions of both the 1958 Act and the Hazardous Materials Act allow for criminal penalties including fines up to 25K and up to 5 years in prison. Must see acts for specific offenses subject to criminal system.	
13.25	Injunctions	Allows FAA to call for injunctions via the US District Court	
13.27	Final Order Of Hearing Officer In Certificate Of Aircraft Registration Proceedings	Describes the actions of Hearing Review officer in final disposition of case	
13.29	Civil Penalties: Streamlined Enforcement Procedures For Certain Security Violations	Covers streamlined enforcement procedures for individuals presenting dangerous or controlled items to a security checkpoint in an airport	
Subpart D - Rules Of Practice For FAA Hearings			
13.31	Applicability	Covers all hearings specified elsewhere in this FAR pt.	
13.33	Appearances	Any person may appear	
13.35	Request For Hearing	Hearings must be in writing, within a given timeframe, be accompanied by a response to the notice of proposed action, and be formally served to the initiator of the notice of proposed action	
13.37	Hearing Officer's Powers	Hearing officer's effectively have powers of judge - hold hearings, admit evidence, question parties, make findings, etc.	
13.39	Disqualification Of Hearing Officer	If disqualified, officer shall withdraw. No stipulation on what grounds for disqualification may be?!	

Section	Title	Summary of Part	Notes/RLV Questions
13.41	[Reserved]		
13.43	Service And Filing Of Pleadings, Motions, And Documents	Discusses methods for serving (mail, in person); also requires evidence (e.g., return receipt); date of filing is date received	
13.44	Computation Of Time And Extension Of Time	Discusses methods for computing time for extension of time to file documents specified in this Subpart.	
13.45	Amendment Of Notice And Answer	At any time more than 10 days before the hearing parties may amend their documents by filing an amendment. After this time amendments are allowed only at the discretion of the Hearing Officer.	
13.47	Withdrawal Of Notice Or Request For Hearing	Either party may withdraw (notice or request for hearing) at any time before the hearing.	
13.49	Motions	Different types of motions are listed.	
13.51	Intervention	Rules for intervention	
13.53	Depositions	Depositions in accordance with section 1004 of the Federal Aviation Act of 1958 (49U.S.C 1484) or Rule 26, Federal Rules of Civil Procedure.	
13.55	Notice Of Hearing	Notice of date, time and place of hearing - consideration to convenience of the parties.	
13.57	Subpoenas And Witness Fees	Subpoenas may be issued for the attendance of witnesses and production of tangible evidence - Different procedure 13.49 applies to FAA employees and documents in the custody of the employee. Witnesses are entitled to a fee.	
13.59	Evidence	Evidence (oral or documentary), rebuttal, and cross examinations as needed for a full disclosure of facts may be presented. FAA counsel has the burden of proof. When grounds for objection of public disclosure of certain information exists an objection may be filed.	

Section	Title	Summary of Part	Notes/RLV Questions
13.61	Argument And Submittals	Adequate opportunity is given for presenting arguments, objections and conclusions -hearing officer decides whether oral or written.	
13.63	Record	A record of transcript will be available to either party. The exhibits, papers, requests, and ruling form the exclusive basis for the issuance of the order.	
Subpart E - Orders Of Compliance Under The Hazardous Materials Transportation Act			
13.71	Applicability	When there is reason to believe that a person is in violation of the Hazardous Materials Transportation Act, or any regulation under it with FAA enforcement responsibility, and if an immediate order of compliance is not warranted, the Counsel may conduct proceedings to determine the nature and extent of violation before directing an order of compliance.	
13.73	Notice Of Proposed Order Of Compliance	A compliance order proceeding starts when the Counsel sends the alleged violator a notice of proposed order of compliance advising the alleged violator of the charges and setting forth the remedial action sought in the form of a proposed order of compliance.	
13.75	Reply Or Request For Hearing	Right to a hearing and right to an appeal is in the form of a reply within 30 days. Absence of reply constitutes a waiver to rights, and results in a final order directing compliance without further notice or proceedings.	
13.77	Consent Order Of Compliance	Case may be disposed by mutual agreement and by the issuance of a consent order of compliance.	
13.79	Hearing	Procedure for the hearing	
13.81	Order Of Immediate Compliance	Procedures for the order of immediate compliance- substantial risk to health, safety of life or property etc.	

Section	Title	Summary of Part	Notes/RLV Questions
13.83	Appeal	Rules for notice of appeal - within 20 days after the date of issuance of the order.	
13.85	Filing, Service, And Computation Of Time	Same rules as 13.43 except for order of immediate compliance as in 13.18, and the periods of time as in 13.44	
13.87	Extension Of Time	Extension may be granted by the Administrator, if good cause is shown.	
Subpart F - Formal Fact-Finding Investigation Under An Order Of Investigation			
13.101	Applicability	Fact finding investigations in which order has been filed under 13.3 or 13.5	
13.103	Order Of Investigation	Defines scope, form, and authority for investigation.	
13.105	Notification	Notice of investigation or a subpoena is sent to persons under investigation, person required to testify or person required to produce documents/evidence.	
13.107	Designation Of Additional Parties	Additional parties may be assigned to the investigation.	
13.109	Convening Of Investigation	Convening of the investigation shall be conducted in places convenient to parties for expeditious and efficient handling of the investigation.	
13.111	Subpoenas	Details of issuance of subpoenas	
13.113	Noncompliance With The Investigative Process	Judicial enforcement against non-compliance.	
13.115	Public Proceedings	Proceedings are public unless for public interest.	
13.117	Conduct Of Investigative Proceeding Or Deposition	Conduct, questioning, raising objections and other details of interacting with the witness.	

Section	Title	Summary of Part	Notes/RLV Questions
13.119	Rights Of Persons Against Self-Incrimination	If a person refuses on the basis of a privilege against self-incrimination, an order may be issued to require testimony. However this testimony cannot be used in any criminal case, except in a prosecution of perjury, giving a false statement, or otherwise failing to comply with the order.	
13.121	Witness Fees	Compensation	
13.123	Submission By Party To The Investigation	Information to be submitted to the Presiding Officer.	
13.125	Depositions	Depositions for investigative purposes.	
13.127	Reports, Decisions, And Orders	Details of the reports, decisions and orders - publication as prescribed by section 313(b) of the Federal Aviation Act.	
13.129	Post-Investigative Action	Actions will depend upon the report and any information in the possession of the Administrator.	
13.131	Other Procedures	Presiding Officer may rule on other procedures not in this Subpart.	
Subpart G - Rules Of Practice In FAA Civil Penalty Actions			
13.201	Applicability	Penalties, limits and date restrictions.	
13.202	Definitions	Definition of terms	
13.203	Separation Of Functions	Restriction of input to FAA decision maker by investigator only through the public proceedings.	
13.204	Appearances And Rights Of Parties	Who can appear and be heard with or without counsel. Access to document, data, or evidence.	
13.205	Administrative Law Judges	Functions and disqualification.	
13.206	Intervention	Intervention not later than 10 days before the hearing.	
13.207	Certification Of Documents	Signature on the documents, and the meaning of signatures.	
13.208	Complaint	Filing no later than 20 days after hearing.	
13.209	Answer	Written answer to the complaint.	

Section	Title	Summary of Part	Notes/RLV Questions
13.21	Filing Of Documents	Filing in the Hearing Docket.	
13.211	Service Of Documents	Definition of valid serving.	
13.212	Computation Of Time	Computation of time for the sake of measuring time limitations and extensions.	
13.213	Extension Of Time	Rules for extension	
13.214	Amendment Of Pleadings	Filing, time limit, and response.	
13.215	Withdrawal Of Complaint	Complaint or the request of hearing may be withdrawn- the proceedings may be dismissed under this Subpart with prejudice.	
13.216	Waivers	In written form.	
13.217	Joint Procedural Or Discovery Schedule	Schedule for filing all pre-hearing motions, conducting discovery in the proceedings, or a schedule that governs all pre-hearing motions and discovery.	
13.218	Motions	A party for an order or ruling not provided in this Subpart may do so by motions.	
13.219	Interlocutory Appeals	A party may not appeal until the initial decision has been entered into the record.	
13.22	Discovery	Any party may initiate discovery at any time after a complaint has been files in the proceedings.	
13.221	Notice Of Hearing	60 days of notice of the date, time and location of the hearing.	
13.222	Evidence	A party is entitled to submit evidence.	
13.223	Standard Of Proof	The party with the burden of proof shall prove the party's case.	
13.224	Burden Of Proof	Except in case of an affirmative defense, the burden of proof is on the agency.	
13.225	Offer Of Proof	If evidence has been excluded by ruling, evidence may be offered for the record on appeal.	
13.226	Public Disclosure	Information in the record may be withheld from	

Section	Title	Summary of Part	Notes/RLV Questions
	Of Evidence	public disclosure- process is explained.	
13.227	Expert Or Opinion Witnesses	Agency employee cannot be called as an expert or opinion witness for parties other than the FAA. Vice versa.	
13.228	Subpoenas	To compel the attendance of a witness or to require production of documents or tangible items.	
13.229	Witness Fees	Witnesses shall be compensated.	
13.23	Record	Transcripts of all of the events, data and evidence are recorded. -open to public upon the requisite payment.	
13.231	Argument Before The Administrative Law Judge	Procedures for presenting the case.	
13.232	Initial Decision	Form and distribution	
13.233	Appeal From Initial Decision	Appeal process	
13.234	Petition To Reconsider Or Modify A Final Decision And Order Of The FAA Decision Maker On Appeal	No modifications to initial decision. Form and distribution of the petition.	
13.235	Judicial Review Of A Final Decision And Order	This petition for review should be no later than 60 days after the final decision and the order has been served on the party.	
Subpart H - Civil Monetary Penalty Inflation Adjustment			
13.301	Scope And Purpose	Regular adjustment for inflation of civil monetary penalties.	
13.303	Definitions	Definition of terms	
13.305	Cost Of Living Adjustments Of Civil Monetary	Formulae for computing cost of living adjustments.	

Section	Title	Summary of Part	Notes/RLV Questions
	Penalties		
Subpart I - Flight Operational Quality Assurance Programs			
13.401	FOQA Program: Prohibition Against Use Of Data For Enforcement Purposes	Data collected under the FOQA program cannot be used for enforcement purposes.	

14 CFR 21 Certification Procedures for Products and Parts

Effective Date	05/09/02
Contents and review purpose	This FAR part contains certification procedures for type certificates and changes, production certificates, airworthiness certificates, certain materials, parts, processes and appliances. This FAR was reviewed for applicability in the RLV domain.

Subpart A - General

Section	Title	Summary of Part	Notes/RLV Questions
21.1	Applicability	No operations, no maintenance	
21.2	Falsification Of Applications, Reports, Or Records	No operations, no maintenance	
21.3	Reporting Of Failures, Malfunctions, And Defects	Certificate holder reports failures, malfunctions and defects in process or product that can cause specific events. These events prevent the aircraft from a safe flight or landing, or put crew or passengers under risk of fire or environmental failures. Do not have to report failures caused by improper maintenance or improper use, or already reported problems or those manufactured by a foreign manufacturer. Reports made to ACO within 24 hours or the next working day in an acceptable form/manner. The actual data needed in the report are listed.	Need to address failure-reporting -when finding what problem, how soon after finding a problem, who should report failures to whom, what information, in which format.
21.5	Airplane Or Rotorcraft Flight Manual	Flight manual is delivered to the owner upon delivery of the aircraft. Shall contain operating limitations, any info to be furnished in the airplane, and engine cooling operating limitations.	
21.11	Applicability	Rules governing certificate holders	
21.13	Eligibility	No restrictions	

Section	Title	Summary of Part	Notes/RLV Questions
21.15	Application For Type Certificate	Application form, format and contents including engine operating characteristics and operating limitations	Operating characteristics and operating limitations are part of the design.
21.16	Special Conditions	Novel and unusual design means special conditions to be issued. (These may include maintenance or operating conditions)	Clauses for handling new and novel designs.
21.17	Designation Of Applicable Regulations	Extra airworthiness criteria may be imposed to provide safety.	New and novel designs may be imposed extra space worthiness constraints.
21.19	Changes Requiring A New Type Certificate	Investigation of compliance when extensive changes are made to design, power, thrust or weight.	Changes made during maintenance may invalidate the original design- need to look at the risks/safety.
21.21	Issue Of Type Certificate: Normal, Utility, Acrobatic, Commuter, And Transport Category Aircraft, Manned Free Balloons; Special Classes Of Aircraft; Aircraft Engines; Propellers.	Nothing specifically on maintenance	Classification of RLVs may provide a tiered approach to maintenance and operating requirements and limitations.
21.23	Reserved		
21.24	Issuance Of Type Certificate: Primary Category Aircraft	Flight manual is required. Special inspection and preventive maintenance program is part of the design.	Inspections and preventive maintenance program should be proposed at the time of the licensing process.
21.25	Issue Of Type Certificate: Restricted Category Aircraft	Special purpose operations, compliance with noise, safety, operating limitations according to its intended use.	Operation limitations according to its intended use.
21.27	Issue Of Type Certificate: Surplus Aircraft Of The Armed Forces	Experience in the armed forces may be used. Applicable regulations depend upon the date of acceptance of the aircraft by the Armed Forces.	What are the maintenance and operating procedures for RLVs in the Armed forces?
21.29	Issue Of Type Certificate: Import Products	Noise and exhaust emission requirements, airworthiness standards and equivalent safety	

Section	Title	Summary of Part	Notes/RLV Questions
21.31	Type Design	Design data, continued airworthiness instructions, inspection and preventive maintenance program, noise, fuel venting, exhaust emissions.	
21.33	Inspection And Tests	No operations, no maintenance	
21.35	Flight Tests	No operations, no maintenance	
21.37	Flight Test Pilot	No operations, no maintenance	
21.39	Flight Test Instrument Calibration And Correction Report	No operations, no maintenance	Consider calibration of instruments used in testing and maintenance.
21.41	Type Certificate	Contents of type certificate: type design, operating limitations, the certificate data sheet, applicable regulations from this subchapter, any other conditions and limitations	Operation limitations and other conditions or limitations that are prescribed for the product
21.43	Location Of Manufacturing Facilities	Refers to 21.29. No type certificate if the manufacturing is outside of US unless no undue burden on the FAA	Need to consider RLVs manufactured outside of the United States
21.45	Privileges	Privileges of the type certificate holder: refers to 21.173 through 21.189 for obtaining airworthiness certificate, approval for installation of TC'd engine or propeller on certified aircraft, or obtain product certificate for the TC product upon compliance with 21.133 through 21.163, approval of replacement parts	Need to consider prerequisites for space worthiness, production, replacement parts
21.47	Transferability	No operations, no maintenance	Transferability of operating or maintenance privileges and responsibilities.
21.49	Availability	Certificate must be available for examination by the FAA or NTSB	What maintenance or operations documents should be available for inspection?

Section	Title	Summary of Part	Notes/RLV Questions
21.5	Instructions For Continued Airworthiness And Manufacturer's Maintenance Manuals Having Airworthiness Limitations Sections	There are references to 27.1529 (a)(2) and 29.1529 (a)(2). Maintenance manuals containing airworthiness limitations may have approved changes to replacement time, inspection interval or related procedure. These changes should be made available to any operator of the same type of rotorcraft. For TC or STC of an aircraft, engine or propeller after 1/28/81, a set of complete instructions (and changes if any) for continued airworthiness should be supplied to any person required complying with those instructions. References to 23.1529, 25.1529, 27.1529, 29.1529, 31.82, 33.4, 35.4 and 21.17(b),	Maintenance and operations need to know if there are instructions for continued space worthiness or any changes to these instructions. The responsibility is on the certificate holder to provide the data.
21.51	Duration	No operations, no maintenance Effective until surrendered, suspended, revoked, or termination date set by the FAA	
21.53	Statement Of Conformity	Statement of conformity to be submitted to the FAA- establishes that it is the applicant's responsibility to comply and state that they have complied.	A similar statement for safety of maintenance procedures and schedules should be considered.
Subpart C - Provisional Type Certificates			
21.71	Applicability	No operations, no maintenance Procedural requirements and rules for provisional TC	
21.73	Eligibility	No operations, no maintenance Eligibility requirements include requirements for citizenship and manufacturing country.	Should consider requirements for where the repair facilities are located, repair persons' citizenship etc. This requirement is to allow the FAA the ease of inspections for compliance and security.
21.75	Application	No operations, no maintenance- submission of applications, and amendments to the ACO of the geographical area	

Section	Title	Summary of Part	Notes/RLV Questions
21.77	Duration	No operations, no maintenance	Should consider the FAA to reevaluate an application if the business of repair changes hands-mergers and acquisitions.
21.79	Transferability	No operations, no maintenance	Not transferable - the FAA should have the option to reevaluate the repair station
21.81	Requirements For Issue And Amendment Of Class I Provisional Type Certificates	No operations, no maintenance	Maintenance and inspection programs are established for continued airworthiness
21.83	Requirements For Issue And Amendment Of Class II Provisional Type Certificates	No operations, no maintenance	Maintenance and inspection programs are established for continued airworthiness
21.85	Provisional Amendments To Type Certificates	No operations, no maintenance	Operations are always coupled with operational limitations such as weight, speed, flight maneuvers, loading, operation of controls and equipment. These limitations may also be noteworthy when deciding return to service or continued space worthiness after maintenance.
Subpart D - Changes to Type Certificates			
21.95	Applicability	No operations, no maintenance	
21.93	Classification Of Changes In Type Design	Discussion of major and minor changes	Are major and minor changes defined in 400 series? Maintenance considerations include whether the changes warrant reevaluation of original approval.
21.95	Approval Of Minor Changes In Type Design	Minor changes need only substantiating or descriptive data submission.	

Section	Title	Summary of Part	Notes/RLV Questions
21.97	Approval Of Major Changes In Type Design	Major changes need data submission as well as data to prove all configurations of use.	
21.99	Required Design Changes	Airworthiness directives may require a change in design-refers to Part 39	A similar system of Spaceworthiness directives should be imposed-necessary design changes/operational limitations/repairs etc should be defined.
21.101	Designation Of Applicable Regulations	Refers to parts 34 and 36 changed product should comply with the airworthiness requirements. Also refers to parts 23.2, 25.2.27.2 or 29.2 regulations. Change compliance to earlier regulations is allowed in appropriate situations. Level of scrutiny is dependent upon the extent of change. Time limitations for approval of change are also discussed. Extension of the original type certificate application is also discussed. There are also references to 21.17 (b), 21.24,21.25 and 21.17.	
Subpart E - Supplemental Type Certificates			
21.111	Applicability	No operations, no maintenance	
21.113	Requirement Of Supplemental Type Certificate	Major change in type design not great enough to require new type certificate application. Refers to 21.19.	Changes during maintenance should be reviewed to see if they are a change to the original design needing more scrutiny.
21.115	Applicable Requirements	Refers to 21.101, 21.93 (b), (c), part 36 and part 34 for noise, and emissions requirements. Refers to 21.33 and 21.53 for changes to type design.	
21.117	Issue Of Supplemental Type Certificates	Refers to 21.1113 and 21.115. STC requires approval of the type design changes.	
21.119	Privileges	Same as the TC holder privileges- airworthiness certificates, installation approval and production certificate	Space worthiness after changes.

Section	Title	Summary of Part	Notes/RLV Questions
Subpart F - Production Under Type Certificate Only			
21.121	Applicability	No operations, no maintenance	
21.123	Production Under Type Certificate	Rules for the manufacturer of a product: covers inspection of the part, technical data and drawings, geographic office being responsible, an approved production inspection system to assure conformity.	Need to consider for manufacturing of parts such as engines for replacement.
21.125	Production Inspection System: Materials Review Board	Refers to 21.123. Reps from the inspection and engineering to form the materials review board. Control of materials, suitable storage to avoid damage and deterioration, process to assure quality and safety, inspections for conformity, availability of design drawings, controlled design changes and material substitutions, segregation of rejected parts, closed loop material board inspection, retention of inspection records for a period of time.	Maintenance inspections, production and use of approved parts, retaining of documentation.
21.127	Tests: Aircraft	Flight test procedures, flight check-off form, operational check	Flight tests after maintenance?
21.128	Tests: Aircraft Engines	Each aircraft engine is subject to tests. Rocket engines need only to be sampled.	Tests of engines after maintenance.
21.129	Tests: Propellers	Acceptable functional test throughout normal range of operation.	Combination of technology used in aviation may be used for space travel- regulations must fit the old and new technology with intended function.
21.130	Statement Of Conformity	Gives the manufacturer the obligation to make the statement that all rules have been followed.	Gives the responsibility of compliance to the applicant
Subpart G - Production Certificates			
21.131	Applicability	Procedural requirements for the issue of production certificates	Production of engines and approved parts
21.133	Eligibility	Have a TC or an STC and an acceptable application	

Section	Title	Summary of Part	Notes/RLV Questions
21.135	Requirements For Issuance	Supporting data, inspection of organization and production facilities for compliance with 21.139 and 21.143.	
21.137	Location Of Manufacturing Facilities	Location of the production facilities and undue burden on the FAA	How about maintenance facilities located outside of the united states?
21.139	Quality Control	Each article should meet the design provisions of the type certificate	
21.143	Quality Control Data Requirements: Prime Manufacturer	No operations, no maintenance Quality procedures, responsibility, materials, parts and assemblies, special engineering processes, and availability of information to the FAA.	
21.147	Changes In Quality Control System	Changes are to be reviewed by the FAA	Maintenance quality checks - should FAA be able to review any changes to these processes.
21.149	Multiple Products	No operations, no maintenance. Similar products may be grouped under the same production certificate.	
21.151	Production Limitation Record	No operations, no maintenance. lists the type certificate of every product under a given production certificate	
21.153	Amendment Of The Production Certificates	No operations, no maintenance. To add a type certificate or model or both- an application of amendment is needed.	
21.155	Transferability	not transferable	
21.157	Inspections And Tests	No operations, no maintenance. FAA can make any inspections and tests for determining compliance.	
21.159	Duration	No operations, no maintenance. Production certificate can be surrendered, suspended, revoked or terminated or cancelled if the facility is changed.	
21.161	Display	No operations, no maintenance. Certificate should be displayed	

Section	Title	Summary of Part	Notes/RLV Questions
21.163	Privileges	No operations, no maintenance. Privileges of a production certificate holder.	
21.165	Responsibility Of Holder	No operations, no maintenance. Responsibilities	
Subpart H - Airworthiness Certificates			
21.171	Applicability	No operations, no maintenance.	
21.173	Eligibility	No operations, no maintenance. Only registered owners or the agents of the owner of a us registered aircraft can apply.	Should maintenance regs apply to only us registered RLV? Should there be stipulations for the US citizenship of the owner?
21.175	Airworthiness Certificates: Classification	No operations, no maintenance. There are standard airworthiness certificates and special airworthiness certificates (primary, restricted, limited, provisional, special flight permits and experimental certificates)	
21.177	Amendment Or Modification	No operations, no maintenance. Needs an application	
21.179	Transferability	No operations, no maintenance. Transfers with the aircraft	
21.181	Duration	Standard airworthiness is effective as long as maintenance, preventive maintenance and alterations are performed according to parts 43 and 91 of this chapter and the aircraft is registered in the US. Experimental airworthiness is effective for one year as long as compliant with regulations, crew training and market surveys.	Maintenance records are used to assess if the airworthiness certificate is effective.
21.182	Aircraft Identification	ID should be compliant to 45.11 unless in the case of special flight permit, experimental or change of aircraft class.	Are there rules for spacecraft identification?

Section	Title	Summary of Part	Notes/RLV Questions
21.183	Issue Of Standard Airworthiness Certificates For Normal, Utility, Acrobatic, Commuter, And Transport Category Aircraft; Manned Free Balloons; And Special Classes Of Aircraft.	Conformity to type design and condition for safe operation are sufficient for airworthiness cert for a new aircraft under production certificate. If the aircraft was built with type cert only needs the statement of conformity 21.130 to assure that the aircraft conforms to type design and safe operation. Import aircraft (21.29) needs the manufacturing country to certify and conformance to type design and safe operation. For aircraft that has had a different airworthiness certificate, need performance rules for 100 hr inspections as in 43.15 and found airworthy by the manufacturer, part 145 repair station, part 65 mechanic, or the administrator. All of these aircraft need to show compliance to passenger emergency exit requirements, fuel venting and exhaust emission requirements, and noise requirements.	Have many pointers to meeting type design and safe operation AFTER updates and repairs.
21.184	Issue Of Special Airworthiness Certificates For Primary Category Aircraft	Reference to 21.24 (a) (1), 21.29 (Import), 91.409 (a) (1) (airworthy inspection within 12 months) - conformity to type design and condition of safe operation. No multiple certificates.	
21.185	Issue Of Airworthiness Certificates For Restricted Category Aircraft	Refers to 21.183, 21.29 (import), 137.3 (agricultural exception for noise), part 36 (noise requirements).	
21.187	Issue Of Multiple Airworthiness Certification	Restricted category complying with other category requirements, removing or adding equipment by simple mechanical means to convert from categories - certificated mechanic needs to inspect unless not needed for safety. References part 34.	Restricted airworthiness conversion/multiple certificates to cover passenger-carrying capability.
21.189	Issue Of Airworthiness Certificates For Limited Category Aircraft	Conforms to type design and safe operation-good state of preservation and repair.	How do you define a good state of repair?
21.191	Experimental Certificates	New concepts have to show compliance with the function and reliability, crew training, flight capabilities- exhibition, air racing, market surveys, operating amateur-built aircraft, operating kit-built	What are the maintenance and operating procedures for maintaining experimental airworthiness certificate?

Section	Title	Summary of Part	Notes/RLV Questions
		aircraft.	
21.193	Experimental Certificates: General	Application form, format and contents (data needed to safeguard the general public. Purpose of the experiment, estimated time or number of flights, location, three view drawings.	
21.195	Experimental Certificates: Aircraft To Be Used For Market Surveys, Sales Demonstrations, And Customer Crew Training	Altered type design or engine design may have experimental certificate for market surveys, sales and crew training. Has to establish continued airworthiness through inspection and maintenance program.	Inspections and preventive maintenance program should be proposed at the time of type design compliance process.
21.197	Special Flight Permits	When capable of safe flight- for repairs, alterations, maintenance to be performed or to storage, delivering or exporting aircraft, flight testing new production, evacuating aircraft from impending danger, or to authorize exceedance of the max certificated takeoff weight of fuel, fuel carrying facilities or navigation equipment. References 121.79 and 135.17.	Flying the spacecraft to a repair/storage facility.
21.199	Issue Of Special Flight Permits	Submitting information to get special flight permits includes any restrictions needed for safe operation.	
Subpart I - Provisional Airworthiness Certificates			
21.211	Applicability	Procedural requirements for the issue of provisional airworthiness certificates	
21.213	Eligibility	Eligibility of applicant	Citizenship of the applicant
21.215	Application	To MIDO (geographical area)	
21.217	Duration	Unless revoked good for the duration of provisional TC, amendment to a provisional TC or provisional amendment to the TC	What types of airworthiness would be allowed when a design is modified by maintenance, repair or for improvements?
21.219	Transferability	Not transferable	
21.221	Class I Provisional Airworthiness Certificates	No operations, no maintenance Reference to 21.225, 21.213, 21.81 and 91.317	

Section	Title	Summary of Part	Notes/RLV Questions
21.223	Class II Provisional Airworthiness Certificates	No operations, no maintenance Reference to 21.225, 21.213, 21.83, 91.317 and 121.207	
21.225	Provisional Airworthiness Certificates Corresponding With Provisional Amendments To Type Certificates	Covers modifications to aircraft Refers to 21.213, 21.85 (g), 91.317, 121.207	Safe operation with applicable limitations is to be established after modification.
Subpart J - Delegation Option Authorization Procedure			
21.231	Applicability	No operations, no maintenance	
21.235	Application	Form and format and information	
21.239	Eligibility	No operations, no maintenance	
21.243	Duration	Until it is surrendered or suspended	
21.245	Maintenance Of Eligibility	Notify the FAA within 48 hours if not eligible	
21.247	Transferability	Not transferable	
21.249	Inspections	Open to FAA inspection	
21.251	Limits Of Applicability	Refers to 21.253	
21.253	Type Certificates: Application	Application details	Aircraft flight manual if required or a summary of operating limitations or other information for the safe operation of the product.
21.257	Type Certificates: Issue	If the product meets airworthiness, noise, fuel venting, emission requirements.	
21.261	Equivalent Safety Provisions	Administrator's concurrence is needed for all equivalent safety provisions under 21.21	
21.267	Production Certificates	Amendment to production certificate refers to 21.143, 21.293 (a)(1)(ii)	
21.269	Export Airworthiness Approvals	No operations, no maintenance	
21.271	Airworthiness Approval Tags	Refers to 21.251 (b) (4)	
21.273	Airworthiness Certificates Other Than Experimental	No operations, no maintenance	
21.275	Experimental Certificates	Limitations and conditions needed for safety	

Section	Title	Summary of Part	Notes/RLV Questions
21.277	Data Review And Service Experience	Manufacturer needs to investigate any problems in meeting with airworthiness requirements or safety due to a defect in design or manufacture. Any information shall be submitted to the FAA for the issuance of an Airworthiness Directive under part 39.	
21.289	Major Repairs, Rebuilding And Alteration	Major repair or alteration has to meet the applicable airworthiness requirements.	
21.293	Current Records	Technical data that needs to be maintained for the duration of the manufacturing operating under DOA is the record of rebuilding and operation. For 2 years, service difficulties and other data.	What maintenance data should be kept and how long should it be kept?
Subpart K - Approval of Materials, Parts, Processes, and Appliances			
21.301	Applicability	Procedural requirements for approving materials, parts, processes and appliances	Procedure for approval of parts and procedures to be used in maintenance
21.303	Replacement And Modification Parts	Record of where and how a part was manufactured, drawings, structural strength of the part, show that the design of the part meets with the type design and the fabrication process, construction, and assembly conform to the design.	All of this section applies to maintenance - this is too long to summarize. Read the original.
21.305	Approval Of Materials, Parts, Processes, And Appliances	Refers to 21.303. Approval may be under a parts manufacturer approval, TSO, or type certification procedure or any other approved process.	This section applies to maintenance also.
Subpart L - Export Airworthiness Approvals			
21.321	Applicability	Procedural requirements for the issue of export airworthiness approvals.	
21.323	Eligibility	No operations, no maintenance	
21.325	Export Airworthiness Approvals	Kinds of approvals	
21.327	Application	No operations, no maintenance	
21.329	Issue Of Export Certificates Of Airworthiness For Class I Products	No operations, no maintenance	

Section	Title	Summary of Part	Notes/RLV Questions
21.331	Issue Of Airworthiness Approval Tags For Class II Products	No operations, no maintenance	
21.333	Issue Of Export Certificates Of Airworthiness For Class III Products	No operations, no maintenance	
21.335	Responsibilities Of Exporters	No operations, no maintenance	
21.337	Performance Of Inspections And Overhauls	Repair station requirements for export airworthiness approvals.	Not sure if these are a consideration in the "priority" of RLV maintenance regs.
21.339	Special Export Airworthiness Approval For Aircraft	Flight of the aircraft through other countries for the purpose of sale.	Do we need special airworthiness regulations for RLV if it traverses through other countries? What would be the maintenance and operations considerations in international Agreements?
Subpart M - Designated Alteration Station Authorization Procedures			
21.431	Applicability	Designated Alteration Station (DAS) authorization procedures for issuing different types of airworthiness certificates- supplemental TC, experimental certificates, amending standard airworthiness certificates	This section applies to repair stations, operators and manufacturers of products - I.e, maintenance and operation procedures.
21.435	Application	Application goes to the ACO of the geographical area. Discusses the information needed on the application. Refers to compliance with 21.439 (a)(4)	Applicable for certification of repair facilities and of the staff.
21.439	Eligibility	Refers to part 145 (domestic repair station certificate), part 121 (commercial operating certificate), 43.3(I) (manufacturer of a product - alteration authority). Adequate maintenance facilities and personnel, appropriate products, staff for engineering, flight test and inspection to determine compliance for airworthiness.	Technical knowledge and experience with regulations is required. Not sure how the experience with the FAA is relevant for RLV- only need to be able to determine safe operating conditions.

Section	Title	Summary of Part	Notes/RLV Questions
21.441	Procedure Manual	References 21.439 (a)(4). Procedures are needed for all activities that may affect safe operation-inspections, approving changes to procedures or to operating limitations, or any amendments. Change of this procedure must also be approved.	Procedure approval for DAS like stations.
21.443	Duration	Can be suspended. DAS should return the certificate if not effective.	Having the DAS like certificate is a responsibility of the holder-when holding it the station is claiming to be compliant to the regulations-good point to copy to RLV maintenance.
21.445	Maintenance Of Eligibility	Notify the FAA within 48 hours if not eligible or if there is any change	Applies to RLV
21.447	Transferability	Not transferable	
21.449	Inspections	Open to FAA inspection	
21.451	Limits Of Applicability	Only covers rating of repair station Refers to alteration authority under 43.3(I). Part 34 and part 36 requirements are cited for supplemental TC. DAS authorization is subject to any limitations prescribed by the FAA.	"Limitation" is a good clause to have in the RLV repair station rules.
21.461	Equivalent Safety Provisions	FAA concurrence needed on equivalent safety provisions under 21.21	
21.463	Supplemental Type Certificates	Follow the procedure manual as in 21.441, find the airworthiness requirements, and propose means of compliance, proper design for safe operation. Within 30 days of issue of STC submit design data and any revisions to Aircraft Flight Manual and limitations and other info needed for safe operation.	Any work from the maintenance should be looked at from the design and safe operation point of view - always be mindful of operating limitations and any other data that is needed for safe operation.

Section	Title	Summary of Part	Notes/RLV Questions
21.473	Airworthiness Certificates Other Than Experimental	Refers to 21.441 for following procedure manual before making an amendment to a standard airworthiness certificate. Find that the applicable airworthiness requirements are met and the condition of safe operation is met.	
21.475	Experimental Certificates	Limitations and conditions needed for safety	
21.477	Data Review And Service Experience	Close the loop on any findings of non compliance - submit data for Airworthiness Directive under part 39	Need similar system of self regulation for RLV
21.493	Current Records	Data to be kept for FAA review. Data includes any alteration difficulties. Data should be turned over to the FAA if the DAS authorization terminates.	Need to consider data what needs to be kept, for how long, and what happens to data if the repair station is no longer authorized.
Subpart N - Approval Of Engines, Propellers, Materials, Parts, And Appliances: Import			
21.500	Approval Of Engines And Propellers	Refers to engines and propellers being imported.	
21.502	Approval Of Materials, Parts, And Appliances	Imported parts to be compliant with FAA regs.	
Subpart O - Technical Standard Order Authorizations			
21.601	Applicability	Procedures and rules for TSOA	Are we going to allow parts manufacture under TSO? This is a maintenance issue in a way since we need to define SUP. This may not be an immediate consideration since there will only be OEMs at the beginning to repair their spacecrafts.
21.603	TSO Marking And Privileges	Parts identification	General design and repair concern to have unique identification for parts.
21.605	Application And Issue	Geographical ACO gets the application. References 21.143 (quality control), 21.611(series of minor changes),	

Section	Title	Summary of Part	Notes/RLV Questions
21.607	General Rules Governing Holders Of TSO Authorizations	Conduct required test and inspection (quality control), maintain (21.613), assure proper marking	
21.609	Approval For Deviation	To deviate from a performance standard TSO	
21.611	Design Changes	Minor (21.605(b)) and major changes (21.605)	
21.613	Record Keeping Requirements	What data needs to be kept and for how long	Needed for maintenance (future changes in design or safe operation or limitations), and in accident or incident investigations
21.615	FAA Inspection	TSO article, quality control, tests, facilities, and files are open to inspection	
21.617	Issue Of Letters Of TSO Design Approval: Import Appliances	References applicable TSO standards (21.305(b)), any deviations (21.609), certificate of airworthiness for export (21.502(a))	Are all of the parts manufactured in the US? Is there immediate need for putting rules for import of parts in place?
21.619	Noncompliance	TSOA can be withdrawn for noncompliance.	
21.621	Transferability And Duration	Not transferable and can be terminated by the FAA	

14 CFR 23 Airworthiness Standards: Normal, Utility, Acrobatic, and Commuter Category Airplanes

Effective Date	05/17/02
Contents and review purpose	This FAR part contains airworthiness requirements for small airplanes expressed as performance requirements of an aircraft such as stability, stall, control systems, flight manuals and operating manuals, airframe requirements etc. This FAR was reviewed for applicability in the RLV domain.

Subpart A - General

Section	Title	Summary of Part	Notes/RLV Questions
SFAR 23		Provides additional requirements to be met when applying Pt. 23 to aircraft operating under Pt. 135 flight rules and carrying more than 10 passengers	
23.1	Applicability	Airworthiness standards for normal, utility, and commuter aircraft	
23.2	Special Retroactive Requirements	Seat belts and safety harnesses	
23.3	Airplane Categories	Normal: 9 passengers or less (excluding pilot) and not more than 12,500 lbs, nonacrobatic flying only Utility: 9 passengers or less (excluding pilot) and not more than 12,500 lbs, limited acrobatic flying allowed Acrobatic: 9 passengers or less (excluding pilot) and not more than 12,500 lbs, flight limited only by results of flight test Commuter: 19 passengers of less (excluding pilot) and not more than 19,000 lbs, limited to "normal" flying	
Subpart B - Flight			
23.21	Proof Of Compliance	Testing or analysis, tolerances for testing specified on both weight and CG	

Section	Title	Summary of Part	Notes/RLV Questions
21.23	Load Distribution Limits	Weight and CG limits must be established, cannot exceed the limits proven for the structure and must comply with this part.	
23.25	Weight Limits	Provides constraints for setting weight limits including fuel, passenger/crew weights, and oil. Fuel must meet certain minimum operating time requirements.	
23.29	Empty Weight And Corresponding Center Of Gravity	Provides constraints on calculation of empty weight including required ballast, full fluids; requires configuration to be repeatable.	
23.31	Removable Ballast	Acceptable if provided for and explained in AFM.	
23.33	Propeller Speed And Pitch Limits	Limits and specifications for max speeds and manifold pressures are provided.	
23.45	General	Lists constraints to be applied when determining compliance with other Subparts of this FAR. Includes runway condition, temperature ranges, standard atmospheric pressure, and certain configurations such as engine cowlings.	These types of parameters are needed for some maintenance activities for RLVs.
23.49	Stalling Period	Conditions concerning demonstration of stall performance	Many of these items may not be applicable to certain RLV designs/configurations. Expect this to be case by case for early period of RLV operations.
23.51	Takeoff Speeds	Relationships of various speeds affecting ability to attain flight or abort safely. Also discusses the engine out requirements.	Many of these items may not be applicable to certain RLV designs/configurations. Expect this to be case by case for early period of RLV operations.
23.53	Takeoff Performance	Must be determined - configuration constraints provided.	
23.55	Accelerate-Stop Distance	Discusses safe abort of a takeoff roll	
23.57	Takeoff Path	Relationships of various speeds and rate of climb information - extends to 1500 ft above ground.	May have implications for horizontal takeoff RLV concepts.

Section	Title	Summary of Part	Notes/RLV Questions
23.59	Takeoff Distance And Takeoff Run	Discussion of horizontal distance covered in takeoff - extends to distance traveled before 35 ft altitude reached.	
23.61	Takeoff Flight Path	Begins where takeoff distance (preceding paragraph) ends.	
23.63	Climb: General	Lists sub-parts of this overall rule that govern ops during climb.	
23.65	Climb: All Engines Are Operating	Specifies minimum climb gradients, e.g. 8.3% for landplanes.	
23.66	Takeoff Climb: One-Engine Inoperative	Conditions to demonstrate in event of one-engine out.	
23.67	Climb: One-Engine Inoperative	Conditions to demonstrate in event of one-engine out.	
23.69	Enroute Climb/Descent	Requirement (and conditions) to determine steady gradient and rate of climb for each weight, altitude, and ambient temperature within operational limits.	
23.71	Glide: Single Engine Airplanes	Requirement and test conditions to determine maximum horizontal distance traveled for every 1000 feet of altitude lost	
23.73	Reference Landing Approach Speed	Various speed determinations associated with landing preparation	Will be highly dependent on RLV design
23.75	Landing Distance	Requirement and test conditions to determine horizontal landing distance from 50 feet up	
23.77	Balked Landing	Requirements and test conditions to attain a specific climb gradient when in landing configuration	
Flight Characteristics			
23.141	General	Ties specific compliance to Subparts 23.143 through 23.253 to the specific certification sought.	

Section	Title	Summary of Part	Notes/RLV Questions
Controllability and Maneuverability			
23.143	General	Provides maximum pounds of input force from pilot to successfully control and maneuver from one phase of flight to another. Phases of flight listed as takeoff, climb, level flight, descent, and landing or go-around.	
23.145	Longitudinal Control	Conditions to be met for longitudinal control	Will be considerably affected by RLV design
23.147	Directional And Lateral Control	Conditions to be met for directional control	
23.149	Minimum Control Speed	Requirement to determine minimum control speeds for a variety of conditions	
23.151	Acrobatic Maneuvers	Safe speeds need to be determined for each maneuver included in requested certification.	
23.153	Control During Landings	Requirement for demonstrating control during landing given certain constraints and without exceeding maximum control inputs levels per 23.143.	
23.155	Elevator Control Force In Maneuvers	Test conditions and limits for control forces during maneuvers.	
23.157	Rate Of Roll	Test conditions and requirements for roll rates	
Trim			
23.161	Trim	Test Conditions and requirements for demonstrating acceptable trim limits.	
Stability			
23.171	General	Vehicle must be longitudinally, directionally, and laterally stable.	This is likely to vary considerably by RLV design. There may be cases where both static and dynamic stability should exhibit positive stability.
23.173	Static Longitudinal Stability	Requirements and test conditions to be met to demonstrate static longitudinal stability including trim inputs and positive feedback to the pilot.	

Section	Title	Summary of Part	Notes/RLV Questions
23.175	Demonstration Of Static Longitudinal Stability	Requirements and test conditions to be met to demonstrate static longitudinal stability in various flight phases.	
23.177	Static Directional And Lateral Stability	Requirements and test conditions for this type of stability	
23.181	Dynamic Stability	Requirements and test conditions for this type of stability	
Stalls			
23.201	Wings Level Stall	Requirements to roll or yaw the plane and correct the same until stall condition. Test conditions and requirements for demonstrating wing stall characteristics.	
23.203	Turning Flight And Accelerated Turning Stalls	Requirements and test conditions for turning flight and turning stalls.	
23.207	Stall Warning	Requirements for the inclusion and operation of stall warning	
Spinning			
23.221	Spinning	Requirements and test conditions for spin recovery and spin resistant designs	
Ground and Water Handling Characteristics			
23.231	Longitudinal Stability And Control	Design must be such that nose-over (landplanes) and porpoising (seaplanes) is not encountered.	
23.233	Directional Stability And Control	Requirements and test conditions in presence of a 90-degree crosswind of a specified speed.	
23.235	Operation On Unpaved Surfaces	General statement including "satisfactory characteristics"	This language, while very loose, may be a model for some of the initial O&M rules - I.e., let the criteria exist outside the rule itself including the criteria of "engineering judgment".
23.237	Operation On Water	Must identify a safe wave height at which seaplanes and amphibians can be operated.	

Section	Title	Summary of Part	Notes/RLV Questions
23.239	Spray Characteristics	Requirement not to blind pilot or damage propellers with spray - seaplanes and amphibians	
		Miscellaneous Flight Requirements	
23.251	Vibration And Buffeting	Must be kept below levels that might cause structural damage or impede controllability. Stall buffeting is ok.	
23.253	High Speed Characteristics	Requirements and test conditions for high speed handling characteristics.	
Subpart C - Structure			
		General	
23.301	Loads	Limit loads and ultimate loads defined. Relation to inertia or reconfiguration under loading described.	
23.302	Canard Or Tandem Wing Configurations	States all wing requirements apply, as do appropriate control surface regulations.	
23.303	Factor Of Safety	Requires a safety factor of 1.5.	Need to revisit the use of this term in the shuttle domain.
23.305	Strength And Deformation	No permanent deformation. Must be able to sustain ultimate loads for 3 seconds.	
23.307	Proof Of Structure	Each critical load condition must be demonstrated - structural analysis can be substituted provided there is precedence.	
		Flight Loads	
23.321	General	Test stipulations for all flight load factors.	
23.331	Symmetrical Flight Conditions	Loads must be accounted for in a "rational or conservative manner".	This is more precedent for "open" language.
23.333	Flight Envelope	Requirements and test conditions for combination of airspeed and load factors throughout the flight envelope (defined through combinations of maneuvering and gust criteria). Note: includes mathematical model for shape of gusts that must be used.	

Section	Title	Summary of Part	Notes/RLV Questions
23.335	Design Airspeeds	Design	
23.337	Limit Maneuvering Load Factors	Design	
23.341	Gust Load Factors	Design	
23.343	Design Fuel Loads	Design	
23.345	High Lift Devices	Design	
23.347	Unsymmetrical Flight Conditions	Design	
23.349	Rolling Conditions	Design	
23.351	Yawing Conditions	Design	
23.361	Engine Torque	Design	
23.361	Side Load On Engine Mount	Design	
23.365	Pressurized Cabin Loads	Design	
23.367	Unsymmetrical Loads Due To Engine Failure	Design	
23.369	Rear Lift Truss	Design	
23.371	Gyroscopic And Aerodynamic Loads	Design	
23.373	Speed Control Devices	Design	
Control Surface and Systems Loads			
23.391	Control Surface Loads	Design	
23.393	Loads Parallel To The Hinge Line	Design	
23.395	Control System Loads	Design	
23.397	Limit Control Forces And Torques	Design	
23.399	Dual Control System	Design	
23.405	Secondary Control System	Design	
23.407	Trim Tab Effects	Design	

Section	Title	Summary of Part	Notes/RLV Questions
23.409	Tabs	Design	
23.415	Ground Gust Conditions	Design	
Horizontal Stabilizing and Balancing Surfaces			
23.421	Balancing Loads	Design	
23.423	Maneuvering Loads	Design	
23.425	Gust Loads	Design	
23.427	Unsymmetrical Loads	Design	
Vertical Surfaces			
23.441	Maneuvering Loads	Design	
23.443	Gust Loads	Design	
23.445	Outboard Fins Or Winglets	Design	
Ailerons and Special Devices			
23.455	Ailerons	Design	
23.459	Special Devices	Design - includes slats and spoilers.	
Ground Loads			
23.471	General	Provides definition of limit ground loads.	
23.473	Ground Load Conditions And Assumptions	Test conditions and constraints for this design section.	
23.477	Landing Gear Arrangement	States applicability of 23.479-23.483 for both tricycle and tail gear configurations.	
23.479	Level Landing Conditions	States orientation of aircraft and gear relative to ground for a level landing.	RLV rules will have to consider both normal and abnormal landing configurations.
23.481	Tail-Down Landing Conditions	States orientation of aircraft and gear relative to ground for a tail-down landing.	RLV rules will have to consider both normal and abnormal landing configurations.
23.483	One-Wheel Landing Conditions	Level attitude on one main-gear.	RLV rules will have to consider both normal and abnormal landing configurations.
23.485	Side Load Conditions	Design	
23.493	Braked Roll Conditions	Design	

Section	Title	Summary of Part	Notes/RLV Questions
23.497	Supplementary Conditions For Tail Wheels	Design	
23.499	Supplementary Conditions For Nose Wheels	Design	
23.505	Supplementary Conditions For Ski-Planes	Design	
23.507	Jacking Loads	Design	
23.509	Towing Loads	Design	
23.511	Ground Load; Unsymmetrical Loads On Multiple-Wheel Units	Design	
Water Loads			
23.521	Water Load Conditions	Design	There may be something of use here for RLV's that will be returned to Earth via a water landing. However, better models probably can be found in the space program.
23.523	Design Weights And Center Of Gravity Positions	Design	
23.525	Application Of Loads	Design	
23.527	Hull And Main Float Load Factors	Design	
23.529	Hull And Main Float Landing Conditions	Design	
23.531	Hull And Main Float Takeoff Conditions	Design	
23.533	Hull And Main Float Bottom Pressures	Design	
23.535	Auxiliary Float Loads	Design	

Section	Title	Summary of Part	Notes/RLV Questions
23.537	Seawing Loads	Design	
		Emergency Landing Conditions	
23.561	General	Requirements and test conditions for protecting occupants in the event of a crash landing including g-limits in various directions.	
23.562	Emergency Landing Dynamic Conditions	Requirements and test conditions for protecting occupants in the event of a crash landing including g-limits in various directions.	
		Fatigue Evaluation	
23.571	Metallic Pressurized Cabin Structures	Design	
23.572	Metallic Wing, Empennage, And Associated Structures	Design	
23.573	Damage Tolerance And Fatigue Evaluation Of Structure	Design	
23.574	Metallic Damage Tolerance And Fatigue Evaluation Of Commuter Category Airplanes	Design	
23.575	Inspections And Other Procedures	Requirement to include inspection information associated with above fatigue requirements in Instructions for Continued Airworthiness	Maintenance issue - such fatigue inspections should be a part of the normal RLV turnaround.
		Design and Construction	
23.601	General	Requirement for testing unusual design features	
23.603	Materials And Workmanship	Discusses basic considerations of environmental conditions and workmanship	Similar language would seem to be appropriate for RLV maintenance
23.605	Fabrication Methods	Requirement for process specifications for critical processes	Similar language would seem to be appropriate for RLV maintenance
23.607	Fasteners	Design	

Section	Title	Summary of Part	Notes/RLV Questions
23.609	Protection Of Structure	Design	
23.611	Accessibility Provisions	Design	Expressly mentions maintenance as a driver for determining accessibility - may want to consider language that feeds experience from maintenance back to design process
23.613	Material Strength Properties And Design Values	Design	
23.619	Special Factors	Modifies safety factor in certain cases	
23.621	Casting Factors	Design/Manufacturing	
23.623	Bearing Factors	Design	The wording of many of these sections begs the question of how maintenance can be performed without a set of criteria being established and approved during the design stage.
23.625	Fitting Factors	Design	
23.627	Fatigue Strength	Design	
23.629	Flutter	Design	
Wings			
23.641	Proof Of Strength	Load testing is required - structural analysis is supplemental	
Control Surfaces			
23.651	Proof Of Strength	Design	
23.655	Installation	Design	Maintenance Issue
23.657	Hinges	Safety factor of 6.67	
23.659	Mass Balance	Design - g-loading	
Control Systems			
23.671	General	Easy, smooth, and positive operation. Easily identified and arranged controls.	

Section	Title	Summary of Part	Notes/RLV Questions
23.672	Stability Augmentation And Automatic And Power-Operated Systems	Design	
23.673	Primary Flight Controls	Definition - controls for yaw, pitch, and roll.	
23.675	Stops	Design	
23.677	Trim Systems	Design	
23.679	Control System Locks	Design	
23.681	Limit Load Static Tests	Design	
23.683	Operation Tests	Design	
23.685	Control System Details	Design	
23.687	Spring Devices	Design	
23.689	Cable Systems	Design	
23.691	Artificial Stall Barrier System	Design	
23.693	Joints	Design	
23.697	Wing Flap Controls	Design	
23.699	Wing Flap Position Indicator	Design	
23.701	Flap Interconnection	Design	
23.703	Takeoff Warning System	Design	
Landing Gear			
23.721	General	Design - considerations in case of collapse for not creating a fire hazard	
23.723	Shock Absorption Tests	Design	
23.725	Limit Drop Tests	Design	
23.726	Ground Load Dynamic Tests	Design	
23.727	Reserve Energy Absorption Drop Test	Design	
23.729	Landing Gear Extension And Retraction System	Design - requirement for backup extension capability	

Section	Title	Summary of Part	Notes/RLV Questions
23.731	Wheels	Design	
23.733	Tires	Design	
23.735	Brakes	Design	
23.737	Skis	Design	
23.745	Nose/Tail Wheel Steering	Design	
Floats and Hulls			
23.751	Main Float Buoyancy	Design	
23.753	Main Float Design	Design	
23.755	Hulls	Design	
23.757	Auxiliary Floats	Design	
Personnel and Cargo Accommodations			
23.771	Pilot Compartment	Design	
23.773	Pilot Compartment View	Design	
23.775	Windshield And Windows	Design - defines design based on "factors peculiar to high altitude operation" - includes thermal, pressure, and "inherent characteristics of the material used"	Phraseology may be useful in formulating the RLV rule
23.777	Cockpit Controls	Design	Ultimately, may want to define "universal" design for critical RLV controls, e.g. FSS
23.779	Motion And Effect Of Cockpit Controls	Design	
23.781	Cockpit Control Knob Shape	Design	
23.783	Doors	Design	
23.785	Seats, Berths, Litters, Safety Belts, And Shoulder Harnesses	Design	
23.787	Baggage And Cargo Compartments	Design	
23.791	Passenger Information Signs	Design	

Section	Title	Summary of Part	Notes/RLV Questions
23.803	Emergency Evacuation	Design	
23.805	Flight Crew Emergency Exits	Design	
23.807	Emergency Exits	Design	
23.811	Emergency Exit Marking	Design	
23.812	Emergency Lighting	Design	
23.813	Emergency Exit Access	Design	
23.815	Width Of Aisle	Design	
23.831	Ventilation	Design	
Pressurization			
23.841	Pressurized Cabins	Design	
23.843	Pressurization Tests	Design	
Fire Protection			
23.851	Fire Extinguishers	Design	
23.853	Passenger And Crew Compartment Interiors	Design	
23.855	Cargo And Baggage Compartment Fire Protection	Design	
23.859	Combustion Heater Fire Protection	Design	
23.863	Flammable Fluid Fire Protection	Design	
23.865	Fire Protection Of Flight Controls, Engine Mounts, And Other Flight Structure	Design	
Electrical Bonding and Lighting Protection			
23.867	Electrical Bonding And Protection Against Lightning And Static	Design	

Section	Title	Summary of Part	Notes/RLV Questions
	Electricity		
		Miscellaneous	
23.871	Leveling Means	Design	
Subpart E - Powerplant			
		General	
23.901	Installation	Design	
21.903	Engines	Design - references out to Pt. 33 and 34	
23.904	Automatic Power Reserve System	Design	
23.905	Propellers	Design	
23.907	Propeller Vibration	Design	
23.909	Turbocharger Systems	Design	
23.925	Propeller Clearance	Design	
23.929	Engine Installation Ice Protection	Design	
23.933	Reversing Systems	Design	
23.934	Turbojet And Turbofan Engine Thrust Reverser Systems Test	Design	
23.937	Turbopropeller-Drag Limiting Systems	Design	
23.939	Powerplant Operating Characteristics	Design	
23.943	Negative Acceleration	Design	
		Fuel System	
23.951	General	Design	
23.953	Fuel System Independence	Design	
23.954	Fuel System Lightning Protection	Design	

Section	Title	Summary of Part	Notes/RLV Questions
23.955	Fuel Flow	Design	
23.957	Flow Between Interconnected Tanks	Design	
23.959	Unusable Fuel Supply	Design	
23.961	Fuel System Hot Weather Operation	Design	
23.963	Fuel Tanks: General	Design	
23.965	Fuel Tank Tests	Design - provides for ability to withstand common routine maintenance failures such as "improper securing or loss of fuel filler cap"	Should provide a mechanism for capturing the most common errors in RLV maintenance
23.967	Fuel Tank Installation	Design	
23.969	Fuel Tank Expansion Space	Design	
23.971	Fuel Tank Sump	Design	
23.973	Fuel Tank Filler Connection	Design	
23.975	Fuel Tank Vents And Carburetor Vapor Vents	Design	
23.977	Fuel Tank Outlet	Design	
23.979	Pressure Fueling Systems	Design	
Fuel System Components			
23.991	Fuel Pumps	Design - contains a provision for when emergency equipment is used in normal operation, special provisions must be made to warn in the event of a failure	Affects the MEL and checklist used. This may have bearing on operational and emergency checklists, as well as various commit criteria.
23.993	Fuel System Lines And Fittings	Design	
23.994	Fuel System Components	Design	
23.995	Fuel Valves And Controls	Design	

Section	Title	Summary of Part	Notes/RLV Questions
23.997	Fuel Strainer Or Filter	Design - contains provisions for easy removal of strainers and filters for purposes of maintenance including visual inspection.	Another example of maintenance relying on design.
23.999	Fuel System Drains	Design	
23.1001	Fuel Jettisoning System	Design	
Oil System			
23.1011	General	Design - includes language imposing the more severe of this Subpart and similar language found in Pt. 33.	For all of the RLV FARs, goal should be to avoid this type of duplication so that applicants and FAA will not end up arguing which FAR is more severe.
23.1013	Oil Tanks	Design	
23.1015	Oil Tank Tests	Design	
23.1017	Oil Lines And Fittings	Design	
23.1019	Oil Strainer Or Filter	Design	
23.1021	Oil System Drains	Design	
23.1023	Oil Radiators	Design	
23.1027	Propeller Feathering System	Design	
Cooling			
23.1041	General	Design	
23.1043	Cooling Tests	Design	
23.1045	Cooling Test Procedures For Turbine Engine Powered Airplanes	Design - includes language that ties the test to information contained in the AFM	Need to determine whether approval of a flight manual for operations implies an approval of the underlying design.
23.1047	Cooling Test Procedures For Reciprocating Engine Powered Airplanes	Design	
Liquid Cooling			
23.1061	Installation	Design	
23.1063	Coolant Tank Tests	Design	
Induction System			
23.1091	Air Induction System	Design	

Section	Title	Summary of Part	Notes/RLV Questions
23.1093	Induction System Icing Protection	Design	
23.1095	Carburetor Deicing Fluid Flow Rate	Design	
23.1097	Carburetor Deicing Fluid System Capacity	Design	
23.1099	Carburetor Deicing Fluid System Detail Design	Design	
23.1101	Induction Air Preheater Design	Design	
23.1103	Induction System Ducts	Design	
23.1105	Induction System Screens	Design	
23.1107	Induction System Filters	Design	
23.1109	Turbocharger Bleed Air System	Design	
23.1111	Turbine Engine Bleed Air System	Design	
Exhaust System			
23.1121	General	Design	
23.1123	Exhaust System	Design	
23.1125	Exhaust Heat Exchangers	Design	
Powerplant Controls and Accessories			
23.1141	Powerplant Controls: General	Design - contains language disallowing a single point of failure in the powerplant controls	
23.1142	Auxiliary Power Unit Controls	Design	
23.1143	Engine Controls	Design	
23.1145	Ignition Switches	Design	
23.1147	Mixture Controls	Design	

Section	Title	Summary of Part	Notes/RLV Questions
23.1149	Propeller Speed And Pitch Controls	Design	
23.1153	Propeller Feathering Controls	Design	
23.1155	Turbine Engine Reverse Thrust And Propeller Pitch Settings Below The Flight Regime	Design	
23.1157	Carburetor Air Temperature Controls	Design	
23.1163	Powerplant Accessories	Design	
23.1165	Engine Ignition Systems	Design - contains language that requires annunciation to the crew of any malfunction that is causing the continuous discharge of the batteries	Maintenance requirements should place special attention on those safety systems that exist to safeguard the crew by notifying them of loss of redundancy or capability.
Powerplant Fire Protection			
23.1181	Designated Fire Zones; Regions Included	Design	
23.1182	Nacelle Areas Behind Firewalls	Design	
23.1183	Lines, Fittings, And Components	Design	
23.1189	Shutoff Means	Design	
23.1191	Firewalls	Design	
23.1192	Engine Accessory Compartment Diaphragm	Design	
23.1193	Cowling And Nacelle	Design	
23.1195	Fire Extinguishing Systems	Design	
23.1197	Fire Extinguishing Agents	Design	
23.1199	Extinguishing Agent Containers	Design	

Section	Title	Summary of Part	Notes/RLV Questions
23.1201	Fire Extinguishing Systems Materials	Design	
23.1203	Fire Detector System	Design	
Subpart F - Equipment			
General			
23.1301	Function And Installation	Design - general design considerations (location, labeling, etc.)	
23.1303	Flight And Navigation Instruments	Lists basic instruments	Will need to define what additional instruments should be considered basic for an RLV - may vary by concept.
23.1305	Powerplant Instruments	Lists basic powerplant instruments	Will need to define what additional instruments should be considered basic for an RLV - may vary by concept.
23.1307	Miscellaneous Equipment	Design	
23.1309	Equipment, Systems, And Installations	Design	
Instruments: Installation			
23.1311	Electronic Display Instrument Systems	Design - contains requirement for any useful life limitations to be contained in Instructions for Continued Airworthiness	For RLVs, expect that there will be new classes of life-limited parts. Need to have maintenance requirements covering the determination of when such a limit is reached and rules for disposal of such parts
23.1321	Arrangement And Visibility	Design	
23.1322	Warning, Caution, And Advisory Lights	Design	For RLVs, where a standard model exists for aviation (e.g. warnings-red, cautions-amber, etc.), it would seem prudent to adopt these same models.
23.1323	Airspeed Indicating System	Design	Has a requirement for flight test calibration - Will need to determine when it is truly necessary to flight-test an RLV. Certain concepts may not readily lend themselves to this approach
23.1325	Static Pressure System	Design	

Section	Title	Summary of Part	Notes/RLV Questions
23.1326	Pitot Heat Induction Systems	Design	
23.1327	Magnetic Direction Indicator	Design	
23.1329	Automatic Pilot System	Design - contains language requiring ability of one pilot to be able to physically override autopilot system if it cannot be decoupled	There needs to be an investigation of the types of autopilots systems that might be employed in RLVs to determine if such a requirement is warranted or could be incorporated. This has large ramifications during the "reactive control" portion of an RLV's flight.
23.1331	Instruments Using A Power Source	Design	
23.1335	Flight Director Systems	Design	
23.1337	Powerplant Instruments Installation	Design	
Electrical Systems and Equipment			
23.1351	General	Design	
23.1353	Storage Battery Design And Installation	Design	
23.1357	Circuit Protective Devices	Design	
23.1359	Electrical System Fire Protection	Design	
23.1361	Master Switch Arrangement	Design	
23.1365	Electric Cables And Equipment	Design	
23.1367	Switches	Design	
Lights			
23.1381	Instrument Lights	Design	
23.1383	Taxi And Landing Lights	Design	
23.1385	Position Light System Installation	Design	

Section	Title	Summary of Part	Notes/RLV Questions
23.1387	Position Light System Dihedral Angles	Design	
23.1389	Position Light Distribution And Intensities	Design	
23.1391	Minimum Intensities In The Horizontal Plane Of Position Lights	Design	
23.1393	Minimum Intensities In Any Vertical Plane Of Position Lights	Design	
23.1395	Minimum Intensities In Overlapping Beams Of Position Lights	Design	
23.1397	Color Specifications	Design	
23.1399	Riding Light	Design	
23.1401	Anticollision Light System	Design	
Safety Equipment			
23.1411	General	Design	
23.1415	Ditching Equipment	Design	
23.1416	Pneumatic De-Icer Boot System	Design	
23.1419	Ice Protection	Design	
Miscellaneous Equipment			
23.1431	Electronic Equipment	Design	
23.1435	Hydraulic Systems	Design - includes burst limit and proof limits	
23.1437	Accessories For Multiengine Airplanes	Design	
23.1438	Pressurization And Pneumatic Systems	Design - includes burst limit and proof limits	
23.1441	Oxygen Equipment And Supply	Design	

Section	Title	Summary of Part	Notes/RLV Questions
23.1443	Minimum Mass Flow Of Supplemental Oxygen	Design - specifies pressures and altitudes for oxygen	RLVs will have to draw on both these requirements and those identified by the Space program
23.1445	Oxygen Distribution System	Design	
23.1447	Equipment Standards For Oxygen Dispensing Units	Design	
23.1449	Means For Determining Use Of Oxygen	Design	
23.1450	Chemical Oxygen Generators	Design	
23.1451	Fire Protection For Oxygen Equipment	Design	
23.1453	Protection Of Oxygen Equipment From Rupture	Design	
23.1457	Cockpit Voice Recorders	Design	
23.1459	Flight Recorders	Design	
23.1461	Equipment Containing High-Energy Rotors	Design	
Subpart G - Operating Limitations and Information			
23.1501	General	Specifies that operating limitation must be defined and made available to the crew.	Since operating limits stem from the vehicle design, any RLV operations rule will have to assume a design process in absence of a design rule.
23.1505	Airspeed Limitations	Design	
23.1507	Operating Maneuvering Speed	Design	
23.1511	Flap Extended Speed	Design	
23.1513	Minimum Control Speed	Design	
23.1519	Weight And Center Of Gravity	Design	
23.1521	Powerplant Limitations	Design	
23.1522	Auxiliary Power Unit Limitations	Design	

Section	Title	Summary of Part	Notes/RLV Questions
23.1523	Minimum Flight Crew	Design	
23.1524	Maximum Passenger Seating Configuration	Design	
23.1525	Kinds Of Operation	Design	
23.1527	Maximum Operating Altitude	Design	
23.1529	Instructions For Continued Airworthiness	Requires preparation of ICA	Should be a requirement for RLVs regardless of design/concept.
Markings and Placards			
23.1541	General	Design	A set of standard markings for items like the FSS, propellant management, and other rocket-unique items needs to be defined or identified within existing space domain. This has a bearing on maintenance, particularly the training issue.
23.1543	Instrument Markings: General	Design	
23.1545	Airspeed Indicator	Design	
23.1547	Magnetic Direction Indicator	Design	
23.1549	Powerplant And Auxiliary Power Unit Instruments	Design	
23.1551	Oil Quantity Indicator	Design	
23.1553	Fuel Quantity Indicator	Design	
23.1555	Control Markings	Design	
23.1557	Miscellaneous Markings And Placards	Design	
23.1559	Operating Limitations Placard	Design	
23.1561	Safety Equipment	Design	
23.1563	Airspeed Placards	Design	
23.1567	Flight Maneuver Placard	Design	

Section	Title	Summary of Part	Notes/RLV Questions
Airplane Flight Manual and Approved Manual Material			
23.1581	General	Design - overarching requirement for AFM	An equivalent to the AFM should be a requirement for RLVs regardless of design/concept.
23.1583	Operating Limitations Placard	AFM Content Requirements	
23.1585	Operating Procedures	AFM Content Requirements	
23.1587	Performance Indication	AFM Content Requirements	
23.1589	Loading Information	AFM Content Requirements	
App A to Part 23	Simplified Design Load Criteria	Design	
App B to Part 23	Reserved		
App C to Part 23	Basic Landing Conditions	Design	
App D to Part 23	Wheel Spin-Up And Spring-Back Loads	Design	
App E to Part 23	Reserved		
App F to Part 23	Test Procedure	Design - self-extinguishing materials	
App G to Part 23	Instructions For Continued Airworthiness	ICA Contents and requirements for updating	
App H to Part 23	Installation Of An Automatic Power Reserve (Apr) System	Design	
App I to Part 23	Seaplane Loads	Design	

14 CFR 33 Airworthiness Standards: Aircraft Engines

Effective Date	06/03/02
Contents and review purpose	This FAR part contains rules for design, construction and testing of reciprocating aircraft engines, turbine aircraft engines. It includes instructions for directions for the provision of instructions for continued airworthiness, installation, engine ratings and operational limitations. This FAR was reviewed for applicability in the RLV domain.

Subpart A - General

Section	Title	Summary of Part	Notes/RLV Questions
33.1	Applicability.	Prescribes airworthiness standards for the issue of type certificates and changes for engines. References to applicants under part 21 and requirement to comply with this part and part 34.	RLV requirements may vary depending upon the type of technology and fuel used. Further, we need to consider the operational profile and limitations, design of housing, lubrication, working at altitudes, working at low temperatures, and high temperatures at reentry into the atmosphere.
33.3	General	Aircraft engines must meet this part.	
33.4	Instructions For Continued Airworthiness.	Appendix A gives instructions for continued airworthiness. Completion of the instructions is not required at TC, but is required prior to the first aircraft delivery with installed engine or issuance of a standard certificate of airworthiness	
33.5	Instruction Manual For Installing And Operating The Engine	Contents of instruction manual for engines.	Applies to RLVs.
33.7	Engine Ratings And Operating Limitations.	Refers to 21.41- engine certificate data sheet, which contains ratings and operating limitations.	Applies to RLVs.

Section	Title	Summary of Part	Notes/RLV Questions
33.8	Selection Of Engine Power And Thrust Ratings.	Selected rating must be for lowest power or thrust that one can expect from the same type of engine under similar conditions.	Method of rating is being standardized in this verbiage.
Subpart B -- Design and Construction; General			
33.11	Applicability.	General design and construction requirements for reciprocating and turbine engines	
33.13	[Reserved]		
33.14	Start-Stop Cyclic Stress (Low-Cycle Fatigue).	Establishment of operating limitations by an FAA approved procedure.	
33.15	Materials.	Suitability of materials and conformance to approved specs in terms of material properties and assumptions.	
33.17	Fire Prevention.	Minimize probability of occurrence and spread of fire.	
33.19	Durability	Minimize unsafe conditions between overhaul. References 35.42 for engine type design.	
33.21	Engine Cooling	Within expected operating conditions.	
33.23	Engine Mounting Attachments And Structure	Able to withhold specified loads without failure.	
33.25	Accessory Attachments	Proper operation of accessory drive and mounting attachments.	
33.27	Turbine, Compressor, Fan, And Turbo Supercharger Rotors	Assurance of sufficient strength, engine operating conditions not exceeding structural integrity. Tests and test conditions.	

Section	Title	Summary of Part	Notes/RLV Questions
33.28	Electrical And Electronic Engine Control Systems	Specification reference to instruction manual in 33.5. Any failure in power or data, no single failure or combination of failures, or transients caused by lightening strikes should not prevent continued safe engine operation.	
33.29	Instrument Connection	Unique instrument connections or clearly marked connectors. Various alert indicators.	
Subpart C -- Design and Construction; Reciprocating Aircraft Engines			
33.31	Applicability	Construction requirements for reciprocating aircraft engines.	
33.33	Vibration	No excessive stress on any of the parts because of vibration. No imparting excessive vibration forces to the aircraft structure.	
33.35	Fuel And Induction System	Throughout the operating range under all flight and atmospheric conditions. Ice prevention in air passages. Fuel filtering. Self-draining induction system. Adequate control of fuel injection.	
33.37	Ignition System	Dual ignition system with separate sources of electrical energy.	
33.39	Lubrication System	Lubrication functioning at all flight regimes and atmospheric conditions. Considerations: low supply of lubricant in a wet sump engine, cooling the lubricant, venting with the preclusion of leakage.	
Subpart D -- Block Tests; Reciprocating Aircraft Engines			
33.41	Applicability	Block tests and inspections for reciprocating aircraft engines	

Section	Title	Summary of Part	Notes/RLV Questions
33.42	General	Establishment and recording of adjustment setting and functional characteristic independent of installation before the test.	
33.43	Vibration Test	Torsional and bending vibration characteristics of the crankshaft and the propeller shaft or other output shaft under given conditions.	
33.45	Calibration Tests	Calibration tests to establish power characteristics and the endurance test conditions specified in 33.49. Power check at sea level conditions.	
33.47	Detonation Test	Functioning without detonation throughout the operational range.	
33.49	Endurance Test	150 hours of operation and other specific tests	
33.51	Operation Test	Backfire, starting, idling, acceleration, over speeding, functioning of propeller and ignitions and other characteristics depending upon the design.	
33.53	Engine Component Tests	Each component that cannot be tested according to 33.49, other tests must be performed.	
33.55	Teardown Inspection	Engine is completely disassembled and each component is checked. References 33.4 for type design compliance.	
33.57	General Conduct Of Block Tests	If tests are conducted on a separate engine of identical design, it must be calibrated. Applicant supplies all test facilities including equipment and competent personnel.	

Section	Title	Summary of Part	Notes/RLV Questions
Subpart E -- Design and Construction; Turbine Aircraft Engines			
33.61	Applicability	Additional design and construction requirements for turbine aircraft engines.	
33.62	Stress Analysis	Design safety margin of each turbine engine rotor, spacer, and rotor shaft.	
33.63	Vibration	Functioning without excessive vibration to engine or aircraft structure throughout the flight envelope and operational range.	
33.65	Surge And Stall Characteristics	Engine operated with operating instructions (per 33.5), starting, change of power or thrust, power or thrust augmentation, limiting inlet air distortion, or inlet air temperature should not cause surge or stall.	
33.66	Bleed Air System	The engine must supply bleed air without adverse effect on the engine.	
33.67	Fuel System	Must function properly under each operating condition.	
33.68	Induction System Icing	Must function properly under each operating condition. References appendix C of part 25 for icing conditions.	
33.69	Ignitions System	For starting on the ground and in flight. Redundant system.	
33.71	Lubrication System	Must function properly in the flight altitudes and atmospheric conditions.	
33.72	Hydraulic Actuating Systems	References design criteria of 33.71. Must function properly under all operating conditions of the engine.	
33.73	Power Or Thrust Response	Safety within the thrust and power response requirements.	

Section	Title	Summary of Part	Notes/RLV Questions
33.74	Continued Rotation	Refers to 33.75 for safety requirements during rotation.	
33.75	Safety Analysis	Single or multiple failures do not cause any of the listed unsafe conditions.	
33.76	Bird Ingestion	Precautions and declarations of limitations. Test requirements. Refers to 33.5 (installation limitations), 33.23 (load), 33.94 (Blade containment).	
33.77	Foreign Object Ingestion -- Ice	Protection devices and test requirements.	
33.78	Rain And Hail Ingestion	Protection devices and test requirements.	
33.79	Fuel Burning Thrust Augmenter	Control and safe operation.	
Subpart F -- Block Tests; Turbine Aircraft Engines			
33.81	Applicability	Block tests and inspections for turbine engines	
33.82	General	Adjustment setting and functional characteristics must be established and recorded independent of installation.	
33.83	Vibration Test	Vibration surveys to establish vibration components - experience, analysis and component tests.	
33.85	Calibration Tests	Needed to establish the power characteristics and conditions for endurance tests per 33.87	
33.87	Endurance Test	Total of 150 hours of operation.	
33.88	Engine Over-Temperature Test	Run for 5 mins at max permissible rpm with gas temp at least 75 deg F higher than the max rating's steady state operating limit. This test is checking conditions beyond the operating limit.	

Section	Title	Summary of Part	Notes/RLV Questions
33.89	Operation Test	Test the functioning of the engine at all operating conditions.	
33.90	Initial Maintenance Inspection	Simulate the conditions in which the engine is expected to operate in service to establish when the initial maintenance inspection is required.	
33.91	Engine Component Tests	For those systems that cannot be adequately tested using 33.87, additional tests may be performed on the components.	
33.92	Rotor Locking Tests	Testing of stopping and locking the rotors.	
33.93	Teardown Inspection	Engine is completely disassembled and each component is checked. References 33.4 for type design compliance.	
33.94	Blade Containment And Rotor Unbalance Tests	Engine safety even when the most critical compressor or fan blade or the most critical turbine blade fails while operating at maximum permissible rpm.	
33.95	Engine-Propeller Systems Tests	Engine propeller specific to these engines	
33.96	Engine Tests In Auxiliary Power Unit (APU) Mode	Repeat of the tests in APU mode.	
33.97	Thrust Reversers	Specified number of reversals.	
33.99	General Conduct Of Block Tests	Rules for using an identical engine to conduct block tests.	
App A to Part 33	Instructions For Continued Airworthiness	How to prepare instructions for continued airworthiness for all engine parts- format, content, airworthiness limitations section.	
App B to Part 33	Certification Standard Atmospheric Concentrations Of Rain And Hail	Specifications for Rain and Hail for testing.	

14 CFR 34 Fuel Venting and Exhaust Emission Requirements for Turbine Engine Powered Airplanes

Effective Date	06/03/02
Contents and review purpose	This FAR part contains environmental protection rules for fuel venting and exhaust/smoke emissions. This FAR was reviewed for applicability in the RLV domain.

Subpart A - General

Section	Title	Summary of Part	Notes/RLV Questions
34.1	Definitions	Clean Air Act (42 USC 7401 et seq) and Environmental Protection Agency are cited. Defines other terms also.	Compliance for fuel venting and smoke and exhaust need to be established for RLVs. This is not just a maintenance issue; it is a design issue. Maintenance should assure that the design for fuel venting, and smoke and exhaust are not violated.
34.2	Abbreviations	Set of abbreviations and acronyms.	
34.3	General Requirements	Provides for the approval or acceptance by the EPA and the secretary of transportation re. Clean air act.	
34.4	[Reserved]		
34.5	Special Test Procedures	Special approval for aircraft that is not susceptible to satisfactory testing by procedures in this part. EPA and FAA collaboration.	
34.6	Aircraft Safety	Special provisions for aircraft that cannot meet emission standard within specified time without creating a safety hazard. [40 CFR 87.6]	
34.7	Exemptions	Petition for rule making or exemption process. Lists a number of cases where exemption is granted.	
Subpart B - Engine Fuel Venting Emissions (New And In-Use Aircraft Gas Turbine Engines)			
34.10	Applicability	List of models and dates for applicability.	

Section	Title	Summary of Part	Notes/RLV Questions
34.11	Standard For Fuel Venting Emissions	Elimination of intentional discharge to the atmosphere of fuel drained from fuel nozzle manifolds after the engines are shut down.	
Subpart C - Exhaust Emissions (New Aircraft Gas Turbine Engines			
34.20	Applicability	Applies to the same classes as in 34.21	
34.21	Standards For Exhaust Emissions	Exhaust requirements measured quantitatively.	
Subpart D - Exhaust Emissions (In-Use Aircraft Gas Turbine Engines)			
34.30	Applicability	Applies to all in use aircraft turbine engines per dates specified in 34.31	
34.31	Standards For Exhaust Emissions	Quantitative requirements for emissions	
Subpart E-F [Reserved]			
Subpart G - Test Procedures For Engine Exhaust Gaseous Emissions (Aircraft And Aircraft Gas Turbine Engines)			
34.60	Introduction	Test program to determine conformity of new gas turbine engines with this part.	
34.61	Turbine Fuel Specifications	Fuel compositions during testing - additions for smoke suppression shall not be used.	
34.62	Test Procedure (Propulsion Engines)	Measurement of emission rates	
34.63	[Reserved]		
34.64	Sampling And Analytical Procedures For Measuring Gaseous Exhaust Emissions	Appendices 3 and 5 of the ICAO Annex 16 referenced.	
34.65-34.70	[Reserved]		
34.71	Compliance With	Appendix 6 of ICAO Annex 16 referenced.	

Section	Title	Summary of Part	Notes/RLV Questions
	Gaseous Emission Standards		
Subpart H - Test Procedures For Engine Smoke Emissions (Aircraft Gas Turbine Engines)			
34.80	Introduction	Procedures to check conformity	
34.81	Fuel Specifications	Same as in 34.61	
34.82	Sampling And Analytical Procedures For Measuring Smoke Exhaust Emissions	Appendix 2 of ICAO Annex 16 referenced.	
34.83-34.88	[Reserved]		
34.89	Compliance With Smoke Emission Standards	Appendix 6 of ICAO Annex 16 referenced.	

14 CFR 39 Airworthiness Directives

Effective Date	08/28/02
Contents and review purpose	This FAR part contains the handling of an unsafe condition through Airworthiness Directives. This FAR was reviewed for applicability in the RLV domain.

Section	Title	Summary of Part	Notes/RLV Questions
39.1	Purpose Of This Regulation	Provide a legal framework for ADs.	This entire FAR is generic in nature and could be applied to RLVs in total.
39.3	Definition Of Airworthiness Directives	Legally enforceable rules that apply to various certification items.	
39.5	When does the FAA issue airworthiness directives?	Unsafe condition exists and is likely to be present or develop in other instances of the same type.	
39.7	What is the legal effect of failing to comply with an airworthiness directive?	Violation of this FAR, violation of the statutory law.	
39.9	What if I operate an aircraft or use a product that does not meet the requirements of an airworthiness directive?	Violation of this FAR, violation of the statutory law.	
39.11	What actions do airworthiness	Involves inspections, imposition of limitations or conditions, and actions needed to resolve	

Section	Title	Summary of Part	Notes/RLV Questions
	directives require?	the unsafe condition.	
39.13	Are airworthiness directives part of the Code of Federal Regulations?	Yes, but are published separately due to their nature.	
39.15	Does an airworthiness directive apply if the product has been changed?	Yes - modification, alteration, or repair do not change AD applicability.	
39.17	What must I do if a change in a product affects my ability to accomplish the actions required in an airworthiness directive?	Coordinate with FAA on an alternate means of compliance - must show unsafe condition has been addressed.	
39.19	May I address the unsafe condition in a way other than that set out in the airworthiness directive?	Yes - coordinate first with your principle inspector and then manager identified in AD.	
39.21	Where can I get information about FAA-approved alternative methods of compliance?	Issuing office.	
39.23	May I fly my aircraft to a repair facility to do the work required by	Yes - per provisions in operations specifications. If operations specifications do not include this, a special flight permit may be required. FAA reserves right to deny special	

Section	Title	Summary of Part	Notes/RLV Questions
	an airworthiness directive?	flight permit if FAA deems vehicle cannot be moved safely.	
39.25	How do I get a special flight permit?	Application per 14 CFR 21.199	
39.27	What do I do if the airworthiness directive conflicts with the service document on which it is based?	AD takes precedence.	

14 CFR 43 Maintenance, Preventive Maintenance, Rebuilding and Alteration

Effective Date	04/29/02
Contents and review purpose	This FAR part contains qualifications of personnel, record keeping and approval of return to service. This FAR was reviewed for applicability in the RLV domain.

Subpart A - General

Section	Title	Summary of Part	Notes/RLV Questions
43.1	Applicability	Applies to: Aircraft with US Airworthiness Certificate Foreign aircraft in Part 121 or 135 service Airframe, engines, propellers, appliances and parts of such aircraft Does not apply to aircraft operating under experimental airworthiness certificate Does apply to all life-limited parts removed from TC'd aircraft controlled per Part 43.10	Applies to maintenance, preventive maintenance, rebuilding and alteration. Maintenance is an integral part of preserving type design- how can we handle maintenance without specifying type certificate? Issuance of airworthiness certificate is predicated on design – have no design approval. Will there be a similar concept for RLVs?
43.2	Records Of Overhaul And Rebuilding	Records or forms may not indicate a part has been overhauled unless: Methods and practices acceptable to the Administrator were used to disassemble, clean, inspect, repair, and reassemble the item AND The item has been tested in accordance with acceptable standards as deemed by the Administrator Records or forms may not indicate a part has been rebuilt unless: It has been disassembled, cleaned, inspected, repaired, reassembled, and tested to the same tolerances as a new item	

Section	Title	Summary of Part	Notes/RLV Questions
43.3	[Authorized Persons To Perform Repair]	Items in this section and 43.17 are deemed as important and only authorized persons are allowed to perform those repairs. An authorized supervisor may supervise an unauthorized person performing this repair. References part 65, part 91, part 125, part 121, part 135, part 145 and part 61. Repairs by a pilot/owner under part 61 can repair the aircraft that is not used under 121, 129 or 135. Rotocraft used in remote parts can also be repaired by the pilot. For an air taxi with 9 or fewer passengers, the pilot can make minor removal/reinstallation of cabin seats and stretchers. The manufacturer can repair all parts manufactured by him under type production certificate.	For RLVs it is expected that the original manufacturers will be responsible for repairs initially.
43.5	Approval For RTS After [Repair]	Rules for what should be done before one can approve return to service. References 43.9, 43.11 for maintenance and record entry. References 91.9 for revision of flight manual, operating limitations or flight data.	Need to decide what data needs to be entered/retained by a repair station and what procedures are needed to assure that the repairs did not change the safe operating conditions/limitations.
43.7	[Authorized Persons To Approve Repair]	References 43.17 and this section on who can approve RTS. The same persons authorized to repair under certain conditions in 43.3 can approve the repair under the same conditions.	
43.9	[Repair Records Other Than Inspections]	Details of what should be in the records.	Need to think about the kind of data that might help the person who operates or who maintains the spacecraft after this repair. For example, it may help to note any changes to operational limitations.
43.1	Disposition Of Life-Limited Parts	When a part is life limited, its life has to be recorded, record should be updated and the item should be controlled Part must be marked and segregated so that it is not mistakenly used after its useful life.	Seems useful to keep all of these clauses for the RLV.

Section	Title	Summary of Part	Notes/RLV Questions
43.11	[Repair Records For Inspections]	Records and forms that need to be kept. Instruments are tagged inoperative if they do not pass the inspection per Part 91, 123, 125, §135.411(a)(1), or §135.419	
43.12	Maintenance Records: Falsification, Reproduction, Or Alteration	Guards against false entries.	
43.13	Performance Rules (General)	Maintenance manuals and instructions by the manufacturer shall be used. Methods, techniques, practices, tools, equipment, test apparatus, and any special equipment as specified for continued airworthiness.	
43.15	Additional Performance Rules For Inspections	Inspections are to be performed per Part 123, 125, 135, or §91.409(e) to meet all applicable airworthiness requirements. Inspect wear and tear and engine characteristics.	
43.16	Airworthiness Limitations	Inspections should be mindful of the associated limitations that are specified in Airworthiness Limitations section of a manufacturer's maintenance manual or Instructions for Continued Airworthiness.	
43.17	[Maintenance On US Products By Certain Canadian Persons]	Authorization for repair beyond the bilateral Agreements.	
App. A to Part 43	Major Alterations, Major Repairs, And Preventative Maintenance	Itemized list of major alterations, major repairs and preventive maintenance.	
App. B to Part 43	Recording Of Major Repairs And Major Alterations	Recording and data requirements for major repairs and alterations.	
App. C to Part 43	[Reserved]		

Section	Title	Summary of Part	Notes/RLV Questions
App. D to Part 43	Scope And Detail Of Items [In Annual And 100-Hour Inspections]	Details of what should be done in annual and 100-hour inspection.	For an RLV the frequency of inspections may be measured in number of trips rather than time. The actual details of what needs to be inspected will depend on technology and wear and tear in the normal operation as well as stress under any abnormal conditions.
App. E to Part 43	Altimeter System Test And Inspection	Detailed inspection instructions - very dependent on technology and the usual design.	For RLVs it may be good to steer clear of a certain design or technology and make the inspections too broad.
App. F to Part 43	ATC Transponder Tests And Inspections	Detailed inspection instructions - very dependent on technology and the usual design.	Same as above. Aviation transponders are unlikely to provide the update rates and capabilities needed for RLV surveillance.

14 CFR 65 Certification: Airmen Other Than Crew Members

Effective Date	06/18/02
Contents and review purpose	This FAR part contains certification and retention of certification requirements for airmen such as air traffic tower operators, aircraft dispatchers, and mechanics, repairmen and parachute riggers. This FAR was reviewed for applicability in the RLV domain.

Section	Title	Summary of Part	Notes/RLV Questions
65.1	Applicability	Certificate requirements for air traffic control tower operators, aircraft dispatchers, mechanics, repairmen and parachute riggers.	RTI has included the results of the initial AST review of this FAR part for comparison and completeness. This part prescribes the requirements for issuing…. those certificates and ratings: (a) Aerospace-traffic control-tower operators. (b) Aerospace-craft dispatchers. (c) Mechanics. (d) Repairmen. (e) Parachute riggers. RTI: Applicable for parallel jobs such as mission control operators, operators who may interface with air control personnel, etc. More comments on mechanics in that section.
65.3	Certification Of Foreign Airmen Other Than Flight Crewmembers	Only when the administrator finds that the certificate is needed for the operation or continued airworthiness of a US registered civil aircraft	FAA: A person who is neither a U.S. citizen nor a resident alien is issued a certificate…. when the Administrator finds that the certificate is needed for the operation or continued flightworthiness of a U.S. registered civil aerospace-craft. RTI: Applicable
65.11	Application And Issue	Form and format of the application. Rules for the issue of the certificate.	FAA: (c) Unless authorized by the Administrator, a person whose aerospace traffic control tower operator…. (d)(1) A person whose aerospace traffic control tower operator, aerospace-craft dispatcher…. RTI: Applicable

Section	Title	Summary of Part	Notes/RLV Questions
65.12	Offenses Involving Alcohol And Drugs	Denial of application up to one year after the act. Suspension or revocation of any issued certificate under this part.	RTI: Applicable.
65.13	Temporary Certificate	No more than 120 day to an eligible applicant.	RTI: Applicable
65.15	Duration Of Certificates	Good until surrendered, suspended or revoked. But in the case of a repairman the certificate is good only when the repairman is employed with duties for which the repairman is certificated.	
65.16	Change Of Name: Replacement Of Lost Or Destroyed Certificate	Procedures for replacement of the certificate and/or change of name	RTI: Applicable
65.17	Tests: General Procedure	Test prescribed and administered by the FAA	RTI: Applicable
65.18	Written Tests: Cheating Or Other Unauthorized Conduct	Penalties - not eligible for one year.	RTI: Applicable
65.19	Retesting After Failure	30-day wait	RTI: Applicable
65.20	Applications, Certificates, Logbooks, Reports, And Records: Falsification, Reproduction, Or Alteration	Rules/penalties for falsification of certificates and related records.	RTI: Applicable
65.21	Change Of Address	Change of address to be notified to the FAA within 30 days.	RTI: Applicable
65.23	Refusal To Submit To A Drug Or Alcohol Test	Refusal can result in denial of application or suspension of certificate for a year.	RTI: Applicable

Section	Title	Summary of Part	Notes/RLV Questions
Subpart B - Air Traffic Control Tower Operators			
65.31	Required Certificates, And Rating Or Qualification	No operations, no maintenance	FAA: No person may act as an aerospace traffic control tower operator at an aerospace traffic control tower in connection with civil aerospace-craft unless he --- (a) Holds an aerospace traffic control tower operator certificate issued to him under this Subpart; (b) .... For the purpose of this Subpart, operating position means an aerospace traffic control function performed within or directly associated with the control tower; .... RTI: These requirements have to be gleaned for a parallel job function for an RLV (mission controller communicating with an air traffic controller or a air traffic control tower operator)
65.33	Eligibility Requirements: General	No operations, no maintenance	FAA: To be eligible for an aerospace traffic control tower operator certificate a person must --- ….
65.35	Knowledge Requirements	No operations, no maintenance	FAA: Each applicant for an aerospace traffic control tower operator certificate must pass a written test on --- (a) The flight rules in part TBD of this chapter; (b) Aerospace traffic control procedures, and this Subpart;. (f) Air and space navigation, and aids to air and space navigation; ...
65.37	Skill Requirements: Operating Positions	No operations, no maintenance	FAA: No person may act as an aerospace traffic control tower operator at any operating position unless he has passed a practical test on --- …. (f)(1) The airport or spaceport…. (f)(2). …airspace designated for the airport or spaceport…. (f)(5) The center, alternate airports or spaceports .... and air and space navigation aids used for terminal aerospace traffic control.... (f)(7) Terminal aerospace traffic control procedures and phraseology.

Section	Title	Summary of Part	Notes/RLV Questions
65.39	Practical Experience Requirements: Facility Rating	No operations, no maintenance	FAA: Each applicant for a facility rating at any aerospace traffic control tower must have satisfactorily served --- ….
65.41	Skill Requirements: Facility Ratings	No operations, no maintenance	FAA: Each applicant for a facility rating at any aerospace traffic control tower must have passed a practical test on each item listed in Section 65.37 of this part that is applicable to each operating position at the control tower at which the rating is sought.
65.43	Rating Privileges And Exchange	No operations, no maintenance	FAA: Delete
65.45	Performance Of Duties	No operations, no maintenance	FAA: (a) An aerospace traffic control tower operator shall perform his duties in accordance with the limitations on his certificate….
65.46	Use Of Prohibited Drugs	No operations, no maintenance	FAA: None
65.46a	Misuse Of Alcohol	No operations, no maintenance	FAA: None
65.46b	Testing For Alcohol	No operations, no maintenance	FAA: None
65.47	Maximum Hours	No operations, no maintenance	FAA: Except in an emergency, a certificated aerospace traffic control tower operator must be relieved of all duties for at least 24 consecutive hours at least once during each 7 consecutive days….
65.49	General Operating Rules	No operations, no maintenance	FAA: (a) Except for a person employed….no person may act as an aerospace traffic control tower operator…. (b) Each person holding an aerospace traffic control tower operator certificate…. (c) A certificated aerospace traffic control tower operator…. (d) An aerospace traffic control tower operator.... (e) A certificated aerospace traffic control tower operator….(f) The holder of an aerospace traffic control tower operator certificate....

Section	Title	Summary of Part	Notes/RLV Questions
65.50	Currency Requirements	No operations, no maintenance	FAA: The holder of an aerospace traffic control tower operator certificate may not perform any duties under that certificate unless --- replace current (a) with: (a) He has shown that he meets the requirements for his certificate and facility rating at the control tower concerned, or for operating at positions for which he has previously qualified. Delete (b).
Subpart C - Aircraft Dispatchers			
65.51	Certificate Required	Certificate is required and must be presented for inspection	FAA: Addition of "or aerospacecraft" to all statements were aircraft is referred in each paragraph as applicable. (throughout Pt 65) RTI: Applicable for a dispatcher for an RLV - it needs to be seen if a separate dispatcher is needed for RLVs.
65.53	Eligibility Requirements: General	References 65.55 (knowledge), 65,59 (practical test) and 65.57 (requirements)	RTI: Applicable with different knowledge, test and requirements.
65.55	Knowledge Requirements	Test requires certain aeronautical knowledge in specific areas.	RTI: Applicable
65.57	Experience Or Training Requirements	2 years of recent experience in related specific areas.	FAA: Add 65.57 (5) In space Ops involving Launch processing, Launch, reentry, and recovery of Aerospace vehicles EFFECT ON RLV: Overall Vehicle Ops and Turnaround Capability RTI: Applicable (Airspace issues will be the same for RLVs)
65.59	Skill Requirements	Appendix A contains the test.	RTI: Applicable
65.61	Aircraft Dispatcher Certification Courses: Content And Minimum Hours.	Education with proper curriculum can replace specific number of hours of experience.	RTI: Applicable - RLV knowledge at first may come from class room rather than hands on experience.

Section	Title	Summary of Part	Notes/RLV Questions
65.63	Aircraft Dispatcher Certification Courses: Application, Duration, And Other General Requirements	Details of dispatcher certification courses.	RTI: Applicable with proper changes to accommodate RLV concept of operations.
65.65	Aircraft Dispatcher Certification Courses: Training Facilities.	Adequacy of equipment and materials (plus health and comfort)	RTI: Applicable
65.67	Aircraft Dispatcher Certification Courses: Personnel	Instructor qualifications	RTI: Applicable
65.70	Aircraft Dispatcher Certification Courses: Records	What records of students should be kept and for how long.	RTI: Applicable
Subpart D - Mechanics			
65.71	Eligibility Requirements: General	18 years of age, knows English (in the us), pass all tests within 24 months, comply with all applicable sections, and for special ratings meet 65.77, and within 24 months, 65.75 and 65.79	RTI: The length of time (24 months) may be too long depending upon the need for mechanics and currency required in their training.
65.73	Ratings	Airframe and powerplant	FAA: Addition of: (3) Space-frame and (4) Propulsion, ratings to general mechanic certificate. Possession of additional ratings designates one as an "Aerospace Maintenance Technician" EFFECT ON RLVs: Maintenance Base of knowledge minimum Requirement Met RTI: Need to examine if other ratings are needed for RLVs - for example what other generic functions can be different for an RLV? Technology used for thermal protection on reentry, Life support systems, egress systems etc.

Section	Title	Summary of Part	Notes/RLV Questions
65.75	Knowledge Requirements	Experience requirements are in 65.77, applicable provisions of parts 43 and 91, oral and practical tests in 65.79.	FAA: see 65.73 RTI: Applicable with proper changes to accommodate RLV concept of operations.
65.77	Experience Requirements	Certificate, and proper experience level	FAA: see 65.73 RTI: Experience level should be set for RLVs. At the onset, FAA may be forced to accept academic knowledge, traditional aviation experience, and training by working on RLVs.
65.79	Skill Requirements	Practical tests follows the written test subjects	RTI: Applicable - RLV specific topics need to be tailored to RLV functions and technology used.
65.80	Certificated Aviation Maintenance Technician School Students	Part 147 rules for the school. Students progress should prepare for 65.79 (oral and practical test) which can be taken before the experience as in 65.77 is gained and before taking test in 65.75	RTI: Applicable
65.81	General Privileges And Limitations	Lists the functions that the mechanic may perform. Also references 65.85, 65.87 and 65.95 for additional duties.	
65.83	Recent Experience Requirements	Administrator finds applicant has ability to do the work or has six months time in as a mechanic, supervisor of other mechanics, supervisor of aircraft maintenance or alteration or some combination; determination must have been within 24 months	
65.85	Airframe Rating, Additional Privileges	May approve and return airframes or appliances to service; may conduct 100 hour inspections per Pt. 91	
65.87	Powerplant Rating, Additional Privileges	May approve and return power plants, propellers, or related appliances to service; may conduct 100 hour inspections per Pt. 91	
65.88 Not Found			FAA: May perform Aerospacecraft routine, and other inspection as designated by aerospacecraft license to particular vehicle type and flight regime(s) authorized EFFECT ON RLVs: Oversight of Routine Maintenance Ops and Quality Assurance

Section	Title	Summary of Part	Notes/RLV Questions
65.89	Display Of Certificate	Certificate must be kept in the vicinity of work being performed and must be presented for inspection to FAA, NTSB, or law enforcement upon request	
65.91	Inspection Authorization	Must have current mechanic's certificate (have held it for 3 years), been actively working for last 2 years maintaining aircraft, be based at an FBO, have access to appropriate equipment to perform inspection activities, and pass written test covering major activities associated with Pt 43	FAA: Add: 6) In the case of aerospacecraft inspection authorization both Space-frame and propulsion ratings w/ min. time constraints, facility, and other guidelines as outlined in 65.91 c. (1-5) EFFECT ON RLVs: Oversight of Routine Maintenance Ops and Quality Assurance
65.92	Inspection Authorization Duration	Annual expiration, only good as long as mechanic's license is current, has access to appropriate equipment, still operating from an FBO, and inspection license has not been revoked, surrendered, or suspended	
65.93	Inspection Authorization Renewal	Has performed various inspections during each 90 days of authority including major alterations, progressive inspections, and annual inspections; completes an 8-hour refresher course during each 12 month period, and passes an oral exam governing currency of knowledge of the regulations	
65.95	Inspection Authorization Privileges And Limitations	May inspect and approve for return to service aircraft and/or appliances after major repairs or alterations (excluding certain Pt 121 aircraft); perform annual inspections as required under Pt 43.13 and Pt 43.15	
Subpart E - Repairmen			
65.101	Eligibility Requirements: General	Requirements include being 18 years of age, being employed in a job needing the designation, be recommended by employer, be able to read, write, and speak English (unless operating outside the US), and have either 18 months experience or have formal training; paragraph excludes issuance of repairman certificates for experimental aircraft builders (Pt. 65.104)	

Section	Title	Summary of Part	Notes/RLV Questions
65.103	Repairman Certificate: Privileges And Limitations	May either supervise or perform directly repairs, alterations, or preventative maintenance providing it is within the limitations of his/her certificate and in line with the overall certificates held by employer	
65.104	Repairman Certificate - Experimental Aircraft Builder - Eligibility, Privileges And Limitations	Includes age requirement (18) and citizenship or status as permanent resident; applies to primary builder of the aircraft and allows for determination as to whether the aircraft is in a condition for safe operations	RTI: The wording of this designation appears almost ideally suited for application to the RLV community, at least in this stage of their development
65.105	Display Of Certificate	Certificate must be kept in the vicinity of work being performed and must be presented for inspection to FAA, NTSB, or law enforcement upon request	
Subpart E - Parachute Riggers			
65.111	Certificate Required	Various permutations, but bottom line is: Must hold a certificate to pack, maintain, or alter parachutes used in US	
65.113	Eligibility Requirements: General	Age requirement, English language requirement, compliance to relevant sections below; special grand fathering clause for parachute rigger certificates valid as of Oct. 31, 1962	
65.115	Senior Parachute Rigger Certificate: Experience, Knowledge, And Skill Requirements	Must have packed 20 parachutes under supervision of a certified parachute rigger; pass both a written and oral test along with a practical demonstration of skills; Basic components of written test are specified including parachute construction, manufacturer's instructions, and regulations	
65.117	Military Riggers Or Former Military Riggers: Special Certification Rule	Documented evidence of performing parachute rigging for the US Armed Forces suffices for 65.115	

Section	Title	Summary of Part	Notes/RLV Questions
65.119	Master Parachute Rigger Certificate: Experience, Knowledge, And Skill Requirements	Similar to requirements of 65.115, but now with 100 parachutes and 3 years of experience	
65.121	Type Ratings	Different types include: seat, back, chest, and lap	FAA: Addition of Rating: 5) Aerospace Vehicle Recovery EFFECT ON RLVs: Insure proper Drag device deployment and recovery for applicable vehicles May want to take a look at what was done for the Cirrus Airframe Parachute System (CAPS). CAPS was certified under special condition 23-ACE-76, docket # 118CE.
65.123	Additional Type Ratings: Requirements	To obtain additional rating on license, must provide evidence of packing 20 parachutes of the type requested under supervision of certificated parachute rigger for that type	
65.125	Certificates: Privileges	Specifies what may be packed personally or supervised for both senior and master parachute riggers	
65.127	Facilities And Equipment	Smooth table 40 ft long by 3 ft wide; housing that is properly lit, heated and ventilated for drying/airing parachutes; proper and sufficient quantity of tools for packing	FAA: Add: or suitable for size and configuration of chute or drag device involved
65.129	Performance Standards	Must not do a number of things include pack parachutes other than type rated for, not in accordance with Administrator or manufacturer regs, not safe parachute, and one not properly aired and dried; Must have performed duties for at least 90 days in last 12 months and demonstrated ability to Administrator	

Section	Title	Summary of Part	Notes/RLV Questions
65.131	Records	All packing, maintenance, and alterations will be accompanying be records maintained for at least two years bearing the signature and cert. # of rigger; records shall include type, make, serial number, owner info, what was done, when and where the work was done, and any drop test results	
65.133	Seal	Rigger must have a seal, and that seal must be used to seal pack per manufacturer's specs	
App A to Part 65	Aircraft Dispatcher Courses	This appendix is an extensive list of topics that must be covered in training for dispatchers. The list covers various processes (e.g. NOTAMs), weather-related topics, and aircraft status determination	FAA: Add: or Aerospace, and; Add a para. IX. For Aerospacecraft Dispatch: Additional types determined necessary for safe mission ops of full flight profile of all vehicle types to be dispatched
SFAR No. 58			Ptr to Pt. 121 - will be reviewed in next phase
SFAR No. 96			Ptr to Pt. 61 - deferred as part of the humans on board question

14 CFR 91 General Operating and Flight Rules

Effective Date	06/20/02
Contents and review purpose	This FAR part contains general operating and flight rules such as for flights in particular regions and terrains, and pilot responsibilities. This FAR was reviewed for applicability in the RLV domain.

Subpart A -General

Section	Title	Summary of Part	Notes/RLV Questions	Applicability
In general, Part 91 prescribes rules governing (a) the operation of aircraft (other than moored balloons, kites, unmanned rockets, and unmanned free balloons, which are governed by part 101 of this chapter, and ultralight vehicles operated in accordance with part 103 of this chapter) within the United States, including the waters within 3 nautical miles of the U.S. coast. (b) Each person operating an aircraft in the airspace overlying the waters between 3 and 12 nautical miles from the coast of the United States and (c) Each person on board an aircraft being operated under this part, unless otherwise specified. It also addresses Special Federal Aviation Regulations as listed at the end of this overview. RTI has included the results of the initial AST and Space Access review of this FAR part for comparison and completeness.				
91.1	Applicability.	Governs operation of aircraft (other than moored balloons, kites, unmanned rockets, unmanned free balloons, and ultra lights) within the U.S. and waters within 3 NM of U.S. Coast.	FAA: Redefine applicability for RLVs SA: References 2091.21 - unmanned rockets RTI: What if unmanned RLVs have the same characteristics as aircraft within the ATC environment? Does empowerment flow to ground controller? How do other aircraft within the ATC environment interact with unmanned RLVs? Does ATC talk to the ground controller as if PIC? Also, at what point does control of a transpace flight (transportation through space from one point on the earths surface to another although considered not economically competitive for FEDEX types but may have military application) or on orbit	RTI: All of part 91 flight rules should apply to any RLVs if having same compatibility, flight and operations characteristics as other participating aircraft or companies operating aircraft in the ATC system if operating in ATC environment unless waiverable and waiver is requested and approved by the administrator, (See Part 91.905 for list of waiverable sections), however, public safety should be the first governing factor and a phased approach considered once the following debates are settled: licensing versus certification, flight profile (vertical take-off to horizontal landing, horizontal to horizontal, vertical to vertical) and RLV design that become an

Section	Title	Summary of Part	Notes/RLV Questions	Applicability
			RLV transfer to another governing body and what body would that be? Would there be an international body created to govern space operations?	operational reality.
91.3	Responsibility And Authority Of The Pilot In Command.	PIC is responsible, final authority; may deviate in emergency from part 91 but must report to administrator	RTI: Review applicability to Pilot in Command of ROA. How does NASA treat PIC accountability? Is the PIC really the ultimate commander of a space mission? Maybe. Maybe not. Currently there is a commander on each space mission, but the real mission decisions are made on the ground. The PIC is just along for the ride during parts of the mission, and he/she does not often have access to all the detailed telemetry and other info (weather, etc) available to the ground controllers. Perhaps this section needs to be changed for crewed space launches to include the authority/responsibility of both the on board commander and the on-the-ground mission director (or whatever the title may be).	FAA: applicable RTI: See 91.1 Applicability statement.
91.5	Pilot In Command Of Aircraft Requiring More Than One Required Pilot.	No person can operate aircraft that is typed for more than one req'd pilot unless the PIC meets requirements of 61.85	RTI: What are STS pilots responsible for? Are there a pilot and a co-pilot? Are both dual qualified as Pilot In Command? The shuttle has 2 pilots- the mission-designated commander and pilots are both shuttle pilots. I think they have very specifically defined roles and responsibilities	RTI: See 91.1 Applicability statement.

Section	Title	Summary of Part	Notes/RLV Questions	Applicability
			during the mission and both fly different parts of the flight but are they qualified to do the other's job if needed.	
91.7	Civil Aircraft Airworthiness.	Can't operate aircraft if not airworthy; PIC is responsible for determining that aircraft is safe for flight; pilot can terminate flight when not airworthy	FAA: Minor Edit RTI: Consider other than pilot? What does STS do? Could a maintenance supervisor "sign off."? Does the pilot actually do a "walk around" or sign for maintenance issues (like in the military when a pilot "accepts" an aircraft maintenance code or creates one upon return to base (RTB)? What are the RLV developers envisioning for this? Again, does the PIC really have the ability to personally inspect a RLV before the mission to determine airworthiness? And the real bearer of knowledge concerning in-flight air/space worthiness is the controller on the ground. In unmanned RLVs is the maintenance super the airworthiness authority?	FAA: applicable RTI: See 91.1 Applicability statement.
91.9	Civil Aircraft Flight Manual, Marking, And Placard Requirements.	Can't operate aircraft if is doesn't comply with manual, markings, placards or as prescribed by certificating authority; U.S. aircraft must be identified IAW 45; helo ops off water heliport	RTI: A manual and placards should be mandated for any "participating" RLV and be of the same standards required of other craft in the ATC environment. What is required of experimental aircraft?	RTI: See 91.1 Applicability statement.
91.11	Prohibition On Interference With Crewmembers.	Leave the crew alone to do duties	FAA: none RTI: This should be extended to ground crew too, i.e. the flight or	FAA: applicable RTI: See 91.1 Applicability statement.

Section	Title	Summary of Part	Notes/RLV Questions	Applicability
			mission controllers in the control room. Interfering with them can be as dangerous to a space mission as interfering with the crew of a conventional aircraft.	
91.13	Careless Or Reckless Operation.	Don't operate aircraft in this manner either for purpose or not for purpose of air navigation (on airport surface) in way that will endanger life or property of another	FAA: edit for spacecraft RTI: Concur	FAA: applicable RTI: See 91.1 Applicability statement.
91.15	Dropping Objects.	Don't drop objects that create hazard to persons or property; must use reasonable caution	FAA: edit for spacecraft SA: Prohibits generation of space debris RTI: Heavy expansion of "debris" standards required. Suggest debris reduction, debris accountability, debris removal and debris collision avoidance systems guidance be developed and governed (by who?). Probably also need to define what the acceptable risk is since an RLV would most likely "drop" something on every flight- a booster, a payload fairing, the payload itself, etc. All of this eventually comes back to earth. An article found on Space.Com website from 2001 describes how the Russians handle expended parts of their boosters. No effort is made to control their landing points so common launch flight paths are littered with fuel tanks and other expended Soyuz parts.	FAA: applicable RTI: See 91.1 Applicability statement.

Section	Title	Summary of Part	Notes/RLV Questions	Applicability
			The locals cut them up and sell the scrap.	
91.17	Alcohol Or Drugs.	Crewmembers: 8 hours bottle to throttle; no being under influence of alcohol or drugs using any drug that affects faculties that is unsafe; or .04 or more BAC. No allowing person under influence to be carried on board. Crew must submit to BAC if lawful request from officer; crew must release results to Administrator within 4 hours which can be used to decertify	FAA: edit for spacecraft RTI: Same should apply to mission controllers or any person who supports any RLV operation with direct influence on the vehicle operation while airborne.	FAA: applicable RTI: See 91.1 Applicability statement.
91.19	Carriage Of Narcotic Drugs, Marihuana, And Depressant Or Stimulant Drugs Or Substances.	Crew can't operate aircraft if knowledge of substances on board except if federally authorized	FAA: edit for spacecraft RTI: Same should apply to mission controllers or any person who supports any RLV operation with direct influence on the vehicle operation while airborne.	FAA: applicable RTI: See 91.1 Applicability statement.
91.21	Portable Electronic Devices.	No use by persons or allowed use by PIC of portable electronic device on US registered aircraft or flying IFR except: recorders, .aids, pacemakers, shavers or those determined don't interfere with nav/comm systems.	RTI: Consider empowering manufacturer (for now) with application deferred until future. Spirit of FAR intended for commercial passengers with cell phones, etc. Different application required for "tighter security environment" of emerging RLVs. Will need further review and development as "tourist" RLVs come to fruition.	FAA: potentially applicable RTI: See 91.1 Applicability statement.
91.23	Truth-In-Leasing Clause Requirement In	Lease or sale of U.S. registered aircraft requires: 12 months FAR adherence, person responsible	RTI: At least one RLV developer is going to launch in "Australia" - is that due to potential market	RTI: See 91.1 Applicability statement.

Section	Title	Summary of Part	Notes/RLV Questions	Applicability
	Leases And Conditional Sales Contracts.	for operational control, statement of factors, info on lease and lease made available. Notification prior to takeoff.	there? Can easily see leasing as a potential as new technology considered "hot" is developed internationally.	
91.25	Aviation Safety Reporting Program: Prohibition Against Use Of Reports For Enforcement Purposes.	FAA won't use SE reports to NASA to enforce unless for accidents or criminal offenses which are excluded	RTI: If public safety is the primary then definitely applicable although the process may need to be expanded for RLV technology or processes.	FAA: potentially applicable RTI: See 91.1 Applicability statement.
91.27 through 91.99	[Reserved]			
Subpart B -Flight Rules		This Subpart Prescribes Flight Rules Governing The Operation Of Aircraft Within The United States And Within 12 Nautical Miles From The Coast Of The United States. This Subpart Regulates The Following Areas: General, Visual Flight Rules And Instrument Flight Rules.		
91.101	Applicability.	Flight rules governing aircraft operation with U.S. and 12 NM from coast of U.S.	RTI: At what point does control of a transspace flight or on orbit RLV transfer to another governing body and what body would that be? Would there be an international body created to govern space operations?	RTI: See 91.1 Applicability statement.
91.103	Preflight Action.	Before each flight PIC will become familiar with all info concerning flight: weather, IFR, airport environments, TOLD data, etc.	FAA: edit for spacecraft RTI: Needs to include spacecraft specific items such as abort modes and locations, payload specifics, etc.	FAA: applicable RTI: See 91.1 Applicability statement.
91.105	Flight Crewmembers At Stations.	Crewmembers must wear seatbelts at all times except to perform duties in conjunction with aircraft operation or go to restroom. Keep belt on when at station, keep shoulder harness	FAA: Edit for spacecraft RTI: Revise for on orbit duties that don't relate to operation of aircraft but other duties (experiments, space walks, etc).	FAA: applicable RTI: See 91.1 Applicability statement.

Section	Title	Summary of Part	Notes/RLV Questions	Applicability
		fastened while at station unless not equipped with or would be unable to perform duties.		
91.107	Use Of Safety Belts, Shoulder Harnesses, And Child Restraint Systems.	PIC must ensure each person is briefed on seatbelt use, notification has occurred and belt is on. Children under two can be held but can't sit on floor, etc. Child safety seat requirements.	FAA: Remove excess regulations on child seats RTI: Delete (ii); Exempt from child restraints until future tourist travel OR leave intact until technology/tourism catch up.	FAA: applicable RTI: See 91.1 Applicability statement.
91.109	Flight Instruction; Simulated Instrument Flight And Certain Flight Tests.	Requires dual controls for instruction with exceptions, no ATP flight testing or class/type rating or part 121 proficiency unless pilot other than pilot being checked is qualified as PIC	FAA: Significant RTI: Eliminate private pilot references if not applicable to RLV pilots? Many STS pilots followed military tracks without civilian equivalency. Will that be acceptable for commercial RLV pilots or will FAA require all to go through private, commercial, ATP ratings?	FAA: possibly applicable RTI: See 91.1 Applicability statement.
91.111	Operating Near Other Aircraft.	Can't be so close as to collide, no formation except by arrangement with PIC, no passengers for hire in formation	FAA: Edit for spacecraft RTI: RLV corridors for separation?	FAA: Applicable RTI: See 91.1 Applicability statement.
91.113	Right-Of-Way Rules: Except Water Operations.	Provides right of way for distress, converging, approaching head-on, overtaking and landing	FAA: Define right-of-way for RLVs RTI: Right of way rules would remain the same for RLVs in the ATC environment if that RLV operates like other like aircraft. The FAR should be expanded to include right of way procedures for operators near vertical launch vehicle trajectories. An ascending rocket powered RLV and any descending one post-mission	FAA: Applicable RTI: See 91.1 Applicability statement.

Section	Title	Summary of Part	Notes/RLV Questions	Applicability
			probably won't have much maneuver capability while in the ATC environment, so they probably need to have the right of way in any encounter.	
91.115	Right-Of-Way Rules: Water Operations.	Aircraft ON water rules for crossing, head-on, overtaking, special circumstances	FAA: Change for water-landing RLVs RTI: Concur with FAA.	FAA: Possibly applicable RTI: See 91.1 Applicability statement.
91.117	Aircraft Speed.	Below 10K MSL indicated of no more than 250 knots; below 2,500 AGL within 4 nm of C or D airspace no more than 200 knots; underlying B space or in VFR corridor no more then 200 knots or if min safe speed is greater than max safe speed in section than min speed	RTI: Consider operating speeds of RLVs in all phases. May be partial applicability for example an RLV launching through "RLV corridor" but RTB like aircraft with like operating speeds. Cross-range capability (see 126)?	RTI: See 91.1 Applicability statement.
91.119	Minimum Safe Altitudes: General.	Rules for altitudes for anywhere, over congested areas, other then congested areas, helicopters	RTI: Consider if the "Ec debate" determines differing criteria for RLVs then over flight of or altitudes over populated areas may need revision otherwise same application as those for "like" aircraft. Cross-range capability (see 126)?	FAA: Possibly applicable RTI: See 91.1 Applicability statement.
91.121	Altimeter Settings.	Altimeter settings below and above 18K MSL	RTI: The FAA is currently in the midst of a massive modernization effort directed at improving air traffic management. The effects of these efforts will need to be evaluated for their usefulness and their ability to operate with RLVs that fly faster and higher than traditional aircraft.	RTI: See 91.1 Applicability statement.
91.123	Compliance With	Once cleared no deviation unless	RTI: Many of the operations the	FAA: Possibly applicable

Section	Title	Summary of Part	Notes/RLV Questions	Applicability
	ATC Clearances And Instructions.	amendment is granted with exceptions; if emergency deviation then report within 48 hours	FARs govern can have carry over to RLV applications even if the FARs themselves don't incorporate RLV activity for example "compliance with mission controller clearances or instructions" or "light signals" (next section). Cross-range capability (see 126)?	RTI: See 91.1 Applicability statement.
91.125	ATC Light Signals.	Surface and aircraft in flight color and type of signals (I.e. steady green is cleared for takeoff)		RTI: Applicable RTI: See 91.1 Applicability statement.
91.126	Operating On Or In The Vicinity Of An Airport In Class G Airspace.	Direction of turns, flap settings, communications with towers in G	RTI: Cross-range capability (the ability of an RLV to maneuver within the atmosphere upon its return from space) will drive many of the regulatory processes. This does not include the ability of an RLV to change it's orbital path while in space. An RLV's ability to maneuver in space is a function of its propulsion system and available propellant. It may be able to trade payload weight carried for fuel increasing it's ability to change orbital path but that may translate into very little out-of-plane maneuverability. It's a different matter in the atmosphere. It could be a significant advantage during contingencies requiring an abort while ascending or a change in landing location while returning from a mission.	FAA: applicable RTI: See 91.1 Applicability statement.
91.127	Operating On Or	Departures, tower	RTI: Cross-range capability?	FAA: applicable

Section	Title	Summary of Part	Notes/RLV Questions	Applicability
	In The Vicinity Of An Airport In Class E Airspace.	communications in E		RTI: See 91.1 Applicability statement.
91.129	Operations In Class D Airspace.	Deviations, communications, arrival or through flight; departing flight, communication failure, min altitudes, approaches, departures, noise abatement, takeoff/landing/taxi clearance in D	RTI: Noise abatement requirements need to be updated for RLV impact. Cross-range capability?	FAA: applicable RTI: See 91.1 Applicability statement.
91.13	Operations In Class C Airspace.	Traffic patterns, communications, arrival or through flight, departing flight, equipment requirements, deviations in C	RTI: Cross-range capability?	FAA: applicable RTI: See 91.1 Applicability statement.
91.131	Operations In Class B Airspace.	Operating rules, pilot requirements, comm/nav equipment requirements for IFR/all ops, transponder requirements in B	RTI: Cross-range capability?	FAA: applicable RTI: See 91.1 Applicability statement.
91.133	Restricted And Prohibited Areas.	Must have permission from controlling agency to deviate	RTI: Cross-range capability?	FAA: applicable RTI: See 91.1 Applicability statement.
91.135	Operations In Class A Airspace.	Clearance, communications, transponder requirement, ATC authorizations	RTI: Cross-range capability?	FAA: applicable RTI: See 91.1 Applicability statement.
91.137	Temporary Flight Restrictions In The Vicinity Of Disaster/Hazard Areas.	Protection of person/property on surface, make safe for relief aircraft, prevent unsafe congestion in skies, NOTAMs will specify restrictions	RTI: Cross-range capability?	FA: applicable RTI: See 91.1 Applicability statement.
91.138	Temporary Flight Restrictions In National Disaster Areas In The State Of Hawaii.	NOTAM will be issued if Governor determines that an inhabited area within disaster area needs protection	RTI: Cross-range capability?	RTI: See 91.1 Applicability statement.
91.139	Emergency Air	Provides process for utilizing	FAA: none	FAA: applicable

Section	Title	Summary of Part	Notes/RLV Questions	Applicability
	Traffic Rules.	NOTAMS to advise on emergency air traffic rules. Airman must follow NOTAMs.	RTI: Cross-range capability?	RTI: See 91.1 Applicability statement.
91.141	Flight Restrictions In The Proximity Of The Presidential And Other Parties.	self-explanatory	FAA: edit for spacecraft	FAA: applicable RTI: See 91.1 Applicability statement.
91.143	Flight Limitation In The Proximity Of Space Flight Operations.	No aircraft of U.S. registry can fly within areas designated for space flight operations except when authorized by ATC, or operated under the control of the DOD Mgr for STS Contingency Support Operations	FAA: edit for spacecraft RTI: RLVs operating in like form as aircraft will be affected, however, some RLVs will be the cause. Evaluate and update for contingency.	FAA: applicable RTI: See 91.1 Applicability statement.
91.144	Temporary Restriction On Flight Operations During Abnormally High Barometric Pressure Conditions.	If barometric pressure along route exceeds or will exceed 31 inches of mercury then no aircraft or flight contrary to requirements. Waivers for emergencies.	RTI: Research. Will RLVs be able to launch "through?" Where did this rule come from? Would these high pressures mess up normal aircraft instruments? Anyway, I would think a RLV would have a fairly specific operating range so as long as the conditions at the launch site and recovery/abort sites are sufficient and within the RLV's operating constraints I think this specific FAR requirement might become moot.	RTI: See 91.1 Applicability statement.
91.145	Management Of Aircraft Operations In The Vicinity Of Aerial	NOTAM to be issued during such events to protect persons or property on surface or in air. FAA will decide if NOTAM needed and will have to waiver or authorize	RTI: Would apply	RTI: See 91.1 Applicability statement.

Section	Title	Summary of Part	Notes/RLV Questions	Applicability
	Demonstrations And Major Sporting Events.	those in area. Standard restrictions listed.		
91.147 THROUGH 91.149	[Reserved]			
Visual Flight Rules				
91.151	Fuel Requirements For Flight In VFR Conditions.	Need fuel to fly to 1st point of intended landing under normal cruise then day: 30 minutes after and night: 45 minutes after. 20 minutes for rotorcraft.	SA: Updated verbiage to "aerospaceplane" RTI: Will RLVs transition from Instrument to VFR? 15 minutes is not enough reserve - RLVs have more stringent landing requirements usually. If RLV goes VFR then should it be same as IFR fuel reserves? Will design allow that? Maybe not. Some RLVs might be gliders or return via parachute so this would be inapplicable. Powered ones may not have enough power or fuel capacity to change the landing site- the power might just exist to extend its range, but I would guess that most would not have any sort of real loiter capability at the end of the mission.	RTI: See 91.1 Applicability statement.
91.153	VFR Flight Plan: Information Required.	administrative	FAA: VFR for RLVs? RTI: Will RLVs transition from Instrument to VFR? What is current shuttle practice? A RLV could experience an instrument failure that could require its pilot or ground operator to take over visually. But would this really	RTI: See 91.1 Applicability statement.

Section	Title	Summary of Part	Notes/RLV Questions	Applicability
			count as a transition to VFR or an emergency?	
91.155	Basic VFR Weather Minimums.	No VFR when visibility less or at distance from clouds that is less, than that prescribed for corresponding altitude of class of airspace in provided table. Class G, helo and airplane specific info.	RTI: Will RLVs transition from Instrument to VFR? What is current shuttle practice?	RTI: See 91.1 Applicability statement.
91.157	Special VFR Weather Minimums.	Special VFR with ATC clearance, clear of clouds. Other rules for helos. Visibility guidance.	RTI: Will RLVs transition from Instrument to VFR? What is current shuttle practice?	RTI: See 91.1 Applicability statement.
91.159	VFR Cruising Altitude Or Flight Level.	Except when holding less than 2 min patterns, in aircraft under VFR cruising more than 3K feet AGL shall maintain prescribe altitudes or levels listed.	RTI: Will RLVs transition from Instrument to VFR? What is current shuttle practice?	RTI: See 91.1 Applicability statement.
91.161-91.165	[Reserved]			
Instrument Flight Rules				
91.167	Fuel Requirements For Flight In IFR Conditions.	Need fuel to fly to 1st airport of intended landing then to alternate than 45 minutes at cruise and for helos - 30 minutes. Arrival conditions.	SA: Updated verbiage to "aerospaceplane" RTI: RLV airports? Corridors? Type of landing?	RTI: See 91.1 Applicability statement.
91.169	IFR Flight Plan: Information Required.	Administrative	FAA: edit for spacecraft RTI: Cross-range capability? This one is administrative. If RLVs "play" and have to file a plan then here are the rules.	FAA: applicable RTI: See 91.1 Applicability statement.
91.171	VOR Equipment Check For IFR Operations.	NO IFR using VOR unless equipment meets requirements listed.	RTI: If RLV is participating and has this equipment then should comply. Free flight? New technology?	RTI: See 91.1 Applicability statement.
91.173	ATC Clearance And Flight Plan Required.	Required to fly IFR in controlled space.	RTI: Should there be a letdown procedure for RLVs just like military? ("except for military	RTI: See 91.1 Applicability statement.

Section	Title	Summary of Part	Notes/RLV Questions	Applicability
			aircraft use standard…."). Cross-range capability? Instead of ATC clearance…. mission control clearance?	
91.175	Takeoff And Landing Under IFR.	Approaches into civil airports, authorized DH or MDA, Operation below DH or MDA, landing, Missed Approaches, Takeoff minutes, comparable values of RVR and ground visibility, operations on unpublished routes and use of radar in instrument approaches, procedure turns, ILS components	RTI: Refers to military airports…. should there be RLV airports?	RTI: See 91.1 Applicability statement.
91.177	Minimum Altitudes For IFR Operations.	No IFR below guidance.	RTI: Cross-range capability?	RTI: See 91.1 Applicability statement.
91.179	IFR Cruising Altitude Or Flight Level.	In controlled and uncontrolled airspace	RTI: Cross-range capability?	RTI: See 91.1 Applicability statement.
91.181	Course To Be Flown.	No IFR in controlled airspace unless on federal airway or direct from navaid to fix	RTI: Cross-range capability?	RTI: See 91.1 Applicability statement.
91.183	IFR Radio Communications.	PIC shall have continuous watch maintained and report weather, safety and time altitude info.	RTI: RLVs should not be expected to have this task until RLV operations are a day to day event in like conditions and operations modes as other aircraft required to do this reporting.	RTI: See 91.1 Applicability statement.
91.185	IFR Operations: Two-Way Radio Communications Failure.	Under VFR and IFR conditions with route, altitude info. Leave clearance limit from or not from a fix.	RTI: Cross-range capability?	RTI: See 91.1 Applicability statement.
91.187	Operation Under	Report nav, approach or	RTI: Administrative.	RTI: See 91.1 Applicability

Section	Title	Summary of Part	Notes/RLV Questions	Applicability
	IFR In Controlled Airspace: Malfunction Reports.	communication equipment malfunctions.		statement.
91.189	Category II And III Operations: General Operating Rules.	Must have appropriate ratings, knowledge of aircraft and procedures, etc. Authorized DH guidance.	RTI: Cross-range capability?	RTI: See 91.1 Applicability statement.
91.191	Category II And Category III Manual.	Cat II and III manual for that aircraft onboard	RTI: Administrative.	RTI: See 91.1 Applicability statement.
91.193	Certificate Of Authorization For Certain Category II Operations.	FAA can authorize deviations for small aircraft	RTI: Keywords: Small Aircraft	RTI: See 91.1 Applicability statement.
91.195-91.199	[Reserved]			
Subpart C--Equipment, Instrument, and Certificate Requirements		This Subpart Prescribes Regulates Issues Ranging From Certifications Required For Civil Aircraft To Supplemental Oxygen To Altitude Alerting Systems To Terrain Awareness And Warning Systems.		
91.201	[Reserved]			
91.203	Civil Aircraft: Certifications Required.	No civil aircraft can operate unless it has current airworthiness certificate; U.S. registration, etc.	RTI: Licensing vs. certification….	RTI: See 91.1 Applicability statement. Fuel venting and exhaust requirements under part 34.
91.205	Powered Civil Aircraft With Standard Category U.S. Airworthiness Certificates: Instrument And Equipment Requirements.	Requirements for operation for VFR (day and night) and IFR; flight at or above 24K MSL, cat II ops and cat III ops and exclusions	FAA: define RLV required instruments RTI: Concur - also develop over water applicability, review occupant over 2 years criteria….children in space? When to regulate minors?	FAA: partially applicable RTI: See 91.1 Applicability statement.
91.207	Emergency Locator	ELTs required for U.S. registered aircraft and guidelines for such	RTI: Recoverability	RTI: See 91.1 Applicability statement.

Section	Title	Summary of Part	Notes/RLV Questions	Applicability
	Transmitters.			
91.209	Aircraft Lights.	Position lights required; illumination rules	RTI: All airborne aircraft of any nature need to be seen by the naked eye.	RTI: See 91.1 Applicability statement.
91.211	Supplemental Oxygen.	O2 requirements above 12,5K, 14K and 15K MSL; pressurized cabins; red's "seconds" of backup 02	FAA: edit for spacecraft RTI: (I) 10 minutes is not enough - rewrite for on orbit operations. This might be the place to talk about life support overall for a crewed RLV.	FAA: applicable RTI: See 91.1 Applicability statement.
91.213	Inoperative Instruments And Equipment.	Conditions for taking off with inoperative instruments involving MEL , maintenance records, etc.	RTI: MELs if uncertificated?	RTI: See 91.1 Applicability statement.
91.215	ATC Transponder And Altitude Reporting Equipment And Use.	Mode requirements for transponder.	RTI: If RLVs have compatible equipment and like operations and use the ATC system then applicable. Would an orbiting or near-orbit RLV be tracked by the ATC system? Somewhere in here the responsibility would shift to NORAD/Space command or whomever tracks space objects. With orbiting spacecraft zipping across the country in a matter of minutes the ATC world could quickly get overwhelmed. Perhaps some new ATC sub-agency would handle tracking orbital vehicles and would interface with the military tracking agencies. A special transponder might be called for to avoid interference with the normal, atmospheric ATC system	FAA: potentially applicable RTI: See 91.1 Applicability statement. (Con't from comments) NEW technology such technologies as CTAS, ADS, and data link are, it is hoped, leading to an evolution in air traffic control to a safer, more productive, airspace--reducing ground holds and other delays that are symptomatic of a system straining its capacity and economically burdensome for the airlines. But the evolution may create a revolution. That revolution has been termed free flight. No one knows what will really happen when a transponder injects an orbital altitude into the "system" Will it encode for

Section	Title	Summary of Part	Notes/RLV Questions	Applicability
				higher altitudes? Will it crash the system?
91.217	Data Correspondence Between Automatically Reported Pressure Altitude Data And The Pilot's Altitude Reference.	Can't operate the equipment when ATC directs deactivation unless….	RTI: If RLVs have compatible equipment and use the ATC system then applicable.	RTI: See 91.1 Applicability statement.
91.219	Altitude Alerting System Or Device: Turbojet-Powered Civil Airplanes.	System must alert the pilot, have aural signal, be tested with special equipment, etc.	RTI: If RLVs have compatible equipment and use the ATC system then applicable.	RTI: See 91.1 Applicability statement.
91.221	Traffic Alert And Collision Avoidance System Equipment And Use.	TCAS systems must be approved.	RTI: TCAS? Free Flight?	RTI: See 91.1 Applicability statement.
91.223	Terrain Awareness And Warning System.	6 or more passenger seats and terrain system required that meets min. of class B requirements. Exceptions.	RTI: What about moon terrain? What happens when we get there? How far do we regulate? When does international regulatory body takeover? What will the jurisdictions be? For the now - probably a redundant system between STS cockpit and mission control.	RTI: See 91.1 Applicability statement.
91.225-91.299	[Reserved]			
Subpart D--Special Flight Operations		This Subpart Regulates Issues Ranging From Aerobatic Flight To The Different Categories Of Civil Aircraft (Restricted, Limited, Provisionally Certificated, Experimental) To Carriage Of Candidates In Federal Elections.		

Section	Title	Summary of Part	Notes/RLV Questions	Applicability
91.301	[Reserved]			
91.303	Aerobatic Flight.	No aero over congested, open air assemblies, lateral boundaries, etc.	SA: No changes - just carryover applicability into their version "91.304" - Staging Operations Using IIP "Instantaneous Impact Point RTI: If the "Ec debate" determines differing criteria for RLVs then overflight of populated areas may need revision otherwise same application as those for "like" aircraft.	RTI: See 91.1 Applicability statement.
91.305	Flight Test Areas.	Only over open waters and sparsely populated areas having light air traffic	RTI: Expand for RLVs? Should commercial have their own ROAs like the military has MOAs?	RTI: See 91.1 Applicability statement.
91.307	Parachutes And Parachuting.	Must have approved emergency parachute, packed by rigger, etc. Does not apply to flight tests, etc.	RTI: What effect would this have on high altitude escape? Are their special requirements for fabric/materials at higher altitudes?	RTI: See 91.1 Applicability statement.
91.309	Towing: Gliders.	Towing hitches, safety links, etc.	SA: No changes - just carryover.	
91.311	Towing: Other Than Under 91.309.	Need waiver to tow		
91.313	Restricted Category Civil Aircraft: Operating Limitations.	Can only use restricted category aircraft for special purpose certificated for. No passengers unless….	SA: Sections 2091.313, 315, 317, 319, 325 - No person may operate a restricted, limited, provisionally certificated, experimental, or primary category aircraft, respectively, carrying persons or property for hire.	RTI: See 91.1 Applicability statement.
91.315	Limited Category Civil Aircraft: Operating Limitations.	No persons or property for compensation of hire allowed.	SA: Sections 2091.313, 315, 317, 319, 325 - No person may operate a restricted, limited, provisionally certificated,	RTI: See 91.1 Applicability statement.

Section	Title	Summary of Part	Notes/RLV Questions	Applicability
			experimental, or primary category aircraft, respectively, carrying persons or property for hire.	
91.317	Provisionally Certificated Civil Aircraft: Operating Limitations.	No prov. Cert. Aircraft in conjunction with the type or supp. Type cert. Of that aircraft or unless for training flight crews, demo flights for prospective customers, etc.	SA: Sections 2091.313, 315, 317, 319, 325 - No person may operate a restricted, limited, provisionally certificated, experimental, or primary category aircraft, respectively, carrying persons or property for hire.	RTI: See 91.1 Applicability statement.
91.319	Aircraft Having Experimental Certificates: Operating Limitations.	Can only use for purpose for which cert. Issued, no persons or property for hire, can't operate outside assigned area unless controllable, no hazardous features, operate under VFR, etc.	SA: Sections 2091.313, 315, 317, 319, 325 - No person may operate a restricted, limited, provisionally certificated, experimental, or primary category aircraft, respectively, carrying persons or property for hire. RTI: VFR Day only? How does current RLV manufacturers do it?	RTI: See 91.1 Applicability statement.
91.321	Carriage Of Candidates In Federal Elections.	aircraft other than those under 121, 125 or 135 can receive payment for carriage of Federal election candidate if….		RTI: Not applicable.
91.323	Increased Maximum Certificated Weights For Certain Airplanes Operated In Alaska.	Game and Fish law enforcement, fire detection, fire suppression, etc.		RTI: Not applicable.
91.325	Primary Category Aircraft: Operating Limitations.	No persons or property for compensation of hire allowed.	SA: Sections 2091.313, 315, 317, 319, 325 - No person may operate a restricted, limited, provisionally certificated, experimental, or primary category	RTI: See 91.1 Applicability statement.

Section	Title	Summary of Part	Notes/RLV Questions	Applicability
			aircraft, respectively, carrying persons or property for hire. RTI: SA references this but did not transcribe this part into the report as they did with the other ones.	
91.326--91.399	[Reserved]			
Subpart E--Maintenance, Preventive Maintenance, and Alterations		This Subpart Prescribes Rules Governing The Maintenance, Preventive Maintenance, And Alterations Of U.S.-Registered Civil Aircraft Operating Within Or Outside Of The United States With Exception For The Sections Of This Subpart That Do Not Apply To An Aircraft Maintained In Accordance With A Continuous Airworthiness Maintenance Program Or Those Sections Parts Of This Part That Apply To An Airplane Inspected In Accordance With Part 125 Of This Chapter.		
91.401	Applicability.	Governs maintenance, preventive maintenance, and alterations of U.S. registered civil aircraft operating in or outside U.S.	RTI: Given the current uncertain state of RLV technology, it is hard to predict what a reasonable maintenance requirements would be. Any business minded manufacturer will build a maintenance program that will protect it's equipment as well as prevent legal "relationship" with society keeping public safety in mind. However, the overall principal applies that if RLVs achieve an "aircraft operations like state" that applicable FARs would govern.	RTI: See 91.1 Applicability statement.
91.403	General.	Owner/Operator is primarily responsible for maintaining airworthiness, must go by manufacturer's manual		RTI: See 91.1 Applicability statement.
91.405	Maintenance Required.	Owner/Operator shall inspect IAW Subpart E, ensure maintenance personnel make entries into record about service	FAA: edit for spacecraft	FAA: applicable RTI: See 91.1 Applicability statement.

Section	Title	Summary of Part	Notes/RLV Questions	Applicability
		or inoperative equipment		
91.407	Operation After Maintenance, Preventive Maintenance, Rebuilding, Or Alteration.	Must be approved for return to service and make record entry	FAA: edit for spacecraft	FAA: applicable RTI: See 91.1 Applicability statement.
91.409	Inspections.	Annual inspection within 12 months, airworthiness inspection rules about hire, and exceptions (special flight permit, current experimental certificate, provisional airworthiness); progressive inspections; large airplanes, turbo's, etc.; selection of inspection program and approval of program	FAA: edit for spacecraft	FAA: applicable RTI: See 91.1 Applicability statement.
91.41	Special Maintenance Program Requirements.	Specifies certain airplanes which can't be operated beyond applicable flight cycles unless repair guidelines approved by FAA or Transport Airplane Directorate (I.e. airbus model B2: 36K flights)	RTI: Put RLVs here? Talks about fatigue but could incorporate RLV specific program for emerging technology. Mission life of RLVs is closely related to costs. Given the current uncertain state of RLV technology, it is hard to predict what a reasonable mission life would be, so the figure of 100 has been established. Some think a 500-mission life is a reasonable expectation. The frequency of required depot maintenance is also difficult to anticipate.	RTI: See 91.1 Applicability statement.
91.411	Altimeter System And Altitude Reporting	Inspect within preceding 24 months	RTI: If RLVs have compatible equipment and use the ATC system then applicable.	RTI: See 91.1 Applicability statement.

Section	Title	Summary of Part	Notes/RLV Questions	Applicability
	Equipment Tests And Inspections.			
91.413	ATC Transponder Tests And Inspections.	Inspect within preceding 24 months	RTI: If RLVs have compatible equipment and use the ATC system then applicable.	RTI: See 91.1 Applicability statement.
91.415	Changes To Aircraft Inspection Programs.	When FAA directs changes the owner or operator shall make them or petition		RTI: See 91.1 Applicability statement.
91.417	Maintenance Records.	Describes what maintenance records will be kept and how	FAA: edit for spacecraft	FAA: applicable RTI: See 91.1 Applicability statement.
91.419	Transfer Of Maintenance Records.	Directs disposition of maintenance records by seller/buyer - FAA must be able to access	FAA: edit for spacecraft	FAA: applicable RTI: See 91.1 Applicability statement.
91.421	Rebuilt Engine Maintenance Records.	If rebuilt then okay to start new record if….		RTI: See 91.1 Applicability statement.
91.423--91.499	[Reserved]			

Section	Title	Summary of Part	Notes/RLV Questions	Applicability
Subpart F--Large and Turbine-Powered Multiengine Airplanes		This Subpart Prescribes Operating Rules, In Addition To Those Prescribed In Other Subparts Of This Part, Governing The Operation Of Large And Of Turbojet-Powered Multiengine Civil Airplanes Of U.S. Registry. The Operating Rules In This Subpart Do Not Apply To Those Airplanes When They Are Required To Be Operated Under Parts 121, 125, 129, 135, And 137 Of This Chapter. (Section 91.409 Prescribes An Inspection Program For Large And For Turbine-Powered (Turbojet And Turboprop) Multiengine Airplanes Of U.S. Registry When They Are Operated Under This Part Or Part 129 Or 137.) Operations That May Be Conducted Under The Rules In This Subpart Instead Of Those In Parts 121, 129, 135, And 137 Of This Chapter When Common Carriage Is Not Involved, Include-- (1) Ferry Or Training Flights; (2) Aerial Work Operations Such As Aerial Photography Or Survey, Or Pipeline Patrol, But Not Including Fire-Fighting Operations; (3) Flights For The Demonstration Of An Airplane To Prospective Customers When No Charge Is Made Except For Those Specified In Paragraph (D) Of This Section; (4) Flights Conducted By The Operator Of An Airplane For His Personal Transportation, Or The Transportation Of His Guests When No Charge, Assessment, Or Fee Is Made For The Transportation; And More To List A Few. This Section Also Addresses Time Sharing Agreements, Interchange Agreements, Joint Ownership And Items Which May Be Charged As Expenses.		
91.501	Applicability.	Governs operation of large and turbo-powered multiengine civil airplanes of U.S. registry (ferry or training, aerial photo or pipeline patrol, carriage of officials/teams/property, flight demos to customers, time sharing, interchange, joint ownership, etc)	SA: Part F applies to operations of large and turbine powered multiengine aerospacecraft when the aerospacecraft is being operated for hire.	RTI: See 91.1 Applicability statement.
91.503	Flying Equipment And Operating Information.	PIC will ensure equipment and charts on board like batteries, cockpit checklist, emergency ops checklists, etc)	FAA: some additions and deletions for RLVs SA: Part F applies to operations of large and turbine powered multiengine aerospacecraft when the aerospacecraft is being operated for hire.	FAA: applicable RTI: See 91.1 Applicability statement.
91.505	Familiarity With	PIC will be familiar with manual	FAA: edit for spacecraft	FAA: applicable

Section	Title	Summary of Part	Notes/RLV Questions	Applicability
	Operating Limitations And Emergency Equipment.	and crewmembers with emergency equipment to which assigned	SA: Part F applies to operations of large and turbine powered multiengine aerospacecraft when the aerospacecraft is being operated for hire.	RTI: See 91.1 Applicability statement.
91.507	Equipment Requirements: Over-The-Top Or Night VFR Operations.	No over the top or night VFR unless equipped for IFR ops and has on electric landing light	SA: Part F applies to operations of large and turbine powered multiengine aerospacecraft when the aerospacecraft is being operated for hire. References to other parts using "20" line by line but no verbiage change converting to "aerospaceplane."	RTI: See 91.1 Applicability statement.
91.509	Survival Equipment For Over Water Operations.	No flights over water more than 50 NM from shore unless life preserver or approved flotation; no more than 30 minutes flying or 100 NM from shore unless….	SA: Part F applies to operations of large and turbine powered multiengine aerospacecraft when the aerospacecraft is being operated for hire. References to other parts using "20" line by line but no verbiage change converting to "aerospaceplane."	FAA: applicable RTI: See 91.1 Applicability statement.
91.511	Radio Equipment For Over Water Operations.	No more than 30 minutes or 100 NM from shore unless radio communication to one surface facility, two transmitters, mikes, nav equipment with two independent units….etc.	RTI: For a crewed spacecraft there should be assured communications during all phases of flight, not just over water, so there needs to be a rule mandating that. SA: Part F applies to operations of large and turbine powered multiengine aerospacecraft when the aerospacecraft is being operated for hire. References to other parts using "20" line by line but no verbiage change converting to "aerospaceplane."	FAA: applicable RTI: See 91.1 Applicability statement.

Section	Title	Summary of Part	Notes/RLV Questions	Applicability
91.513	Emergency Equipment.	Must have emergency equipment that's accessible, indicates how to use, fire extinguisher types, first aid, megaphone, etc.	SA: Part F applies to operations of large and turbine powered multiengine aerospacecraft when the aerospacecraft is being operated for hire. References to other parts using "20" line by line but no verbiage change converting to "aerospaceplane."	FAA: applicable RTI: See 91.1 Applicability statement.
91.515	Flight Altitude Rules.	No VFR unless 1K above surface, 1K from mountain or hill for day, etc. Does not apply during t/o or landing, etc….	SA: Part F applies to operations of large and turbine powered multiengine aerospacecraft when the aerospacecraft is being operated for hire. References to other parts using "20" line by line but no verbiage change converting to "aerospaceplane."	RTI: See 91.1 Applicability statement.
91.517	Passenger Information.	Must be signs for passengers on smoking and seatbelts. Be able to go on and off by crew, etc.	SA: Part F applies to operations of large and turbine powered multiengine aerospacecraft when the aerospacecraft is being operated for hire. References to other parts using "20" line by line but no verbiage change converting to "aerospaceplane."	RTI: See 91.1 Applicability statement.
91.519	Passenger Briefing.	Oral brief to passengers on smoking and safety belts, location of exits, equipment, etc.	SA: Part F applies to operations of large and turbine powered multiengine aerospacecraft when the aerospacecraft is being operated for hire. References to other parts using "20" line by line but no verbiage change converting to "aerospaceplane."	FAA: applicable RTI: See 91.1 Applicability statement.
91.521	Shoulder Harness.	Flight deck stations and attendant seats must have combined belts and harnesses.	SA: Part F applies to operations of large and turbine powered multiengine aerospacecraft when	RTI: See 91.1 Applicability statement.

Section	Title	Summary of Part	Notes/RLV Questions	Applicability
			the aerospacecraft is being operated for hire. References to other parts using "20" line by line but no verbiage change converting to "aerospaceplane."	
91.523	Carry-On Baggage.	Bags must be stored in an suitable compartment…..	SA: Part F applies to operations of large and turbine powered multiengine aerospacecraft when the aerospacecraft is being operated for hire. References to other parts using "20" line by line but no verbiage change converting to "aerospaceplane."	RTI: Not applicable in current form but intent can be carried over….prevent RLV crew from being endangered by loose items.
91.525	Carriage Of Cargo.	Guidance on carry on luggage	SA: Part F applies to operations of large and turbine powered multiengine aerospacecraft when the aerospacecraft is being operated for hire. References to other parts using "20" line by line but no verbiage change converting to "aerospaceplane."	RTI: Not applicable in current form but intent can be carried over….prevent RLV crew from being endangered by loose items.
91.527	Operating In Icing Conditions.	Prevents take off if aircraft has frost, snow, ice on prop, windshield, certain instruments, and surfaces etc; IFR/VFR rules	SA: Part F applies to operations of large and turbine powered multiengine aerospacecraft when the aerospacecraft is being operated for hire. References to other parts using "20" line by line but no verbiage change converting to "aerospaceplane."	RTI: See 91.1 Applicability statement.
91.529	Flight Engineer Requirements.	Engineers required for: 80K takeoff lbs typed before 1964, after 1964 - required by type requirements. Eng must have 50 hours time in type aircraft within 6 months and approved by FAA	SA: Part F applies to operations of large and turbine powered multiengine aerospacecraft when the aerospacecraft is being operated for hire. References to other parts using "20" line by line	RTI: Applicable where intent goes but these requirements will be different for RLV crews most likely.

Section	Title	Summary of Part	Notes/RLV Questions	Applicability
			but no verbiage change converting to "aerospaceplane."	
91.531	Second In Command Requirements.	Must have 2nd in command for: large airplane except under SFAR 41, aircraft for which two pilots are typed, commuter with passengers seating, etc.	SA: Part F applies to operations of large and turbine powered multiengine aerospacecraft when the aerospacecraft is being operated for hire. References to other parts using "20" line by line but no verbiage change converting to "aerospaceplane."	RTI: See 91.1 Applicability statement.
91.533	Flight Attendant Requirements.	Flight attendant to passengers' ratios.	SA: Part F applies to operations of large and turbine powered multiengine aerospacecraft when the aerospacecraft is being operated for hire. References to other parts using "20" line by line but no verbiage change converting to "aerospaceplane."	RTI: Not applicable at this time.
91.535	Stowage Of Food, Beverage, And Passenger Service Equipment During Aircraft Movement On The Surface, Takeoff, And Landing.	Directs stowage of service equipment and tray tables, etc.	SA: Part F applies to operations of large and turbine powered multiengine aerospacecraft when the aerospacecraft is being operated for hire. References to other parts using "20" line by line but no verbiage change converting to "aerospaceplane."	RTI: Tray tables, etc. not an issue at this time.
91.536--91.599	[Reserved]			
Subpart G--Additional Equipment and Operating Requirements for Large and Transport Category Aircraft			This Subpart Applies To Operation Of Large And Transport Category U.S.-Registered Civil Aircraft.	
91.601	Applicability.	Applies to large and transport aircraft that are U.S. registered civil.	SA: Verbiage change to "aerospacecraft" in Part G Title and intermittent substitution of "aerospace change" thereafter for	RTI: See 91.1 Applicability statement.

Section	Title	Summary of Part	Notes/RLV Questions	Applicability
			part G. Use of "20."	
91.603	Aural Speed Warning Device.	Transport cat in air commerce must have aural device IAW 25:1303	SA: Verbiage changes to "aerospacecraft" in Part G Title and intermittent substitution of "aerospace change" thereafter for part G. Use of "20."	RTI: See 91.1 Applicability statement.
91.605	Transport Category Civil Airplane Weight Limitations.	takeoff weights - max's, altitudes, fuel and oil, landing airport, manual, etc. (TOLD Data)	SA: Verbiage changes to "aerospacecraft" in Part G Title and intermittent substitution of "aerospace change" thereafter for part G. Use of "20."	RTI: See 91.1 Applicability statement.
91.607	Emergency Exits For Airplanes Carrying Passengers For Hire.	Provides table with aircraft type and number of exits required, exit location	SA: Verbiage changes to "aerospacecraft" in Part G Title and intermittent substitution of "aerospace change" thereafter for part G. Use of "20."	RTI: Crew escape has been a long-standing issue with space program. Will be more applicable in the future.
91.609	Flight Recorders And Cockpit Voice Recorders.	Must have these but gives exceptions like aircraft can be ferried for repair, etc.; 15 day requirement, after 1991 - digitalized, operator keeps info for 60 days after accident	SA: Verbiage changes to "aerospacecraft" in Part G Title and intermittent substitution of "aerospace change" thereafter for part G. Use of "20."	FAA: applicable RTI: Concur with FAA. See 91.1 Applicability statement.
91.611	Authorization For Ferry Flight With One Engine Inoperative.	4 engine air carrier or turbine-engine with 3 can operate with one inoperative to repair site if… flight tests for reciprocating and turbine-engine	SA: Verbiage changes to "aerospacecraft" in Part G Title and intermittent substitution of "aerospace change" thereafter for part G. Use of "20."	RTI: See 91.1 Applicability statement.
91.613	Materials For Compartment Interiors.	no operation of aircraft with amended or sup. Type certificate in excess of 12,5K within 1 year after original certificate	SA: Verbiage changes to "aerospacecraft" in Part G Title and intermittent substitution of "aerospace change" thereafter for part G. Use of "20."	RTI: See 91.1 Applicability statement.
91.615--91.699	[Reserved]			

Section	Title	Summary of Part	Notes/RLV Questions	Applicability
Subpart H--Foreign Aircraft Operations and Operations of U.S.-Registered Civil Aircraft Outside of the United States		This Subpart Applies To The Operations Of Civil Aircraft Of U.S. Registry Outside Of The United States And The Operations Of Foreign Civil Aircraft Within The United States. This Subpart Also Applies To Each Person On Board An Aircraft Operated As Follows: (1) A U.S. Registered Civil Aircraft Operated Outside The United States; (2) Any Aircraft Operated Outside The United States -- (I) That Has Its Next Scheduled Destination Or Last Place Of Departure In The United States If The Aircraft Next Lands In The United States; Or (Ii) If The Aircraft Lands In The United States With The Individual Still On The Aircraft Regardless Of Whether It Was A Scheduled Or Otherwise Planned Landing Site.		
91.701	Applicability.	Operations of civil aircraft of U.S. registry outside U.S. and ops of foreign aircraft within U.S.		RTI: See 91.1 Applicability statement.
91.702	Persons On Board.	Prohibitions on interference with crew applies (part 91.11)		RTI: See 91.1 Applicability statement.
91.703	Operations Of Civil Aircraft Of U.S. Registry Outside Of The United States.	Comply with Convention on International Civil Aviation, other countries regulations except….; comply with 91.705 when in Minimum Navigation Performance Specifications (MNPS) airspace and with 91.706 when in Reduced Vertical Separation Minimum (RVSM) airspace….		RTI: See 91.1 Applicability statement.
91.705	Operations Within Airspace Designated As Minimum Navigation Performance Specification Airspace.	Must have navigation performance capability, authorization and administrator may authorize deviation		RTI: See 91.1 Applicability statement.
91.706	Operations Within Airspace Designed As Reduced Vertical	Must meet requirements in appendix G, be authorized and administrator may authorize deviation		RTI: See 91.1 Applicability statement.

Section	Title	Summary of Part	Notes/RLV Questions	Applicability
	Separation Minimum Airspace.			
91.707	Flights Between Mexico Or Canada And The United States.	Must have IFR or VFR flight plan		RTI: See 91.1 Applicability statement.
91.709	Operations To Cuba.	No allowed unless departure from designated airport of entry, in case of departure….		RTI: See 91.1 Applicability statement.
91.711	Special Rules For Foreign Civil Aircraft.	VFR - no 2 way radio unless one crew can speak English, IFR - not unless two way, U.S. instrument rating held, etc.; over water, flight at or above FL 240, etc.		RTI: See 91.1 Applicability statement.
91.713	Operation Of Civil Aircraft Of Cuban Registry.	Only in controlled airspace and IAW ATC clearance instructions		RTI: Not applicable.
91.715	Special Flight Authorizations For Foreign Civil Aircraft.	Make application to Flight Standards Division Mgr or AIRCRAFT Certification District Manager….		RTI: Not applicable.
91.717--91.799	[Reserved]			
Subpart I--Operating Noise Limits		This Subpart Prescribes Operating Noise Limits And Related Requirements That Apply, As Follows, To The Operation Of Civil Aircraft In The United States. They Specifically Apply To Civil Subsonic Turbojet Airplanes With Maximum Weights Of More Than 75,000 Pounds (Under U.S. And Foreign Registry), U.S. Operators Of Civil Subsonic Turbojet Airplanes Covered By This Subpart. This Section Applies To Operators Operating To Or From Airports In The United States Under This Part And U.S.-Registered Civil Supersonic Airplanes Having Standard Airworthiness Certificates And To Foreign-Registered Civil Supersonic Airplanes That, If Registered In The United States, Would Be Required By This Chapter To Have U.S. Standard Airworthiness Certificates In Order To Conduct The Operations Intended For The Airplane.		
91.801	Applicability: Relation To Pt 36	Prescribes operating noise limits and related requirements that apply to operation of civil aircraft	SA: Added "20."	RTI: See 91.1 Applicability statement.

Section	Title	Summary of Part	Notes/RLV Questions	Applicability
		in U.S.; Sub and supersonic guidance; refers to part 36 for sub/super meanings		
91.803	Part 125 Operators: Designation Of Applicable Regulations.	Tells what requirements apply to what aircraft and dates applied	SA: Added "20."	RTI: See 91.1 Applicability statement.
91.805	Final Compliance: Subsonic Airplanes.	Subsonic must comply with stage 2 or 3 noise levels	SA: Added "20."	RTI: See 91.1 Applicability statement.
91.807	Phased Compliance Under Parts 121, 125, And 135: Subsonic Airplanes.	Compliance schedules based on bypass ratio	SA: Added "20."	RTI: See 91.1 Applicability statement.
91.809	Replacement Airplanes.	Stage 1 aircraft may be operated after compliance dates if under approved plan a replacement plane has been ordered under a binding contract	SA: Added "20."	RTI: See 91.1 Applicability statement.
91.811	Service To Small Communities Exemption: Two-Engine, Subsonic Airplanes.	self-explanatory	SA: Added "20."	RTI: See 91.1 Applicability statement.
91.813	Compliance Plans And Status: U.S. Operations Of Subsonic Airplanes.	Subsonic operators must submit status and plan to Officer of Environment and Energy for achieving and maintaining compliance with noise level requirements with info listed…	SA: Added "20."	RTI: See 91.1 Applicability statement.
91.815	Agricultural And	Can't operate accept for work	SA: Added "20."	RTI: See 91.1 Applicability

Section	Title	Summary of Part	Notes/RLV Questions	Applicability
	Fire Fighting Airplanes: Noise Operating Limitations.	designed for, to train or to conduct "no dispensing" work		statement.
91.817	Civil Aircraft Sonic Boom.	Can't operate civil aircraft in U.S. at a true flight mach number greater than 1 except in compliance with conditions/limitations under appendix B OR operate aircraft for which max speed MM0 exceeds a Mach number of 1 to or from airport in U.S. unless info available to crew to ensure will not cause sonic boom and operator complies	RTI: If 1 psf is acceptable to the public, why isn't that the standard now vs. 0? The shuttle creates a sonic boom so whatever requirements exist to mitigate that problem could apply to other RLVs. SA: Added verbiage "Civil Aerospacecraft Sonic Boom" with rationale that sonic boom overpressure does not exceed 1.0 psf, which is the level that the FAA has determined to be a threshold for public reaction.	RTI: See 91.1 Applicability statement.
91.819	Civil Supersonic Airplanes That Do Not Comply With Part 36.	Applies to civil supersonic a/d that have not been shown to comply with the Stage 2 noise limits of part 36	SA: Added "20."	RTI: See 91.1 Applicability statement.
91.821	Civil Supersonic Airplanes: Noise Limits.	Except for Concords having flight time before 1980 no person may operate civil supersonic aircraft that doesn't comply with Stage 2 limits	SA: Added "20."	RTI: See 91.1 Applicability statement.
91.851	Definitions.	Contiguous U.S., fleet, import, operations specifications, stage 2 noise levels, stage 3, etc.	SA: Added "20."	RTI: See 91.1 Applicability statement.
91.853	Final Compliance: Civil Subsonic Airplanes.	Except as provided in 91.873 after 1999 no aircraft to/from airport in contiguous U.S. without compliance with stage 3	SA: Added "20."	RTI: See 91.1 Applicability statement.
91.855	Entry And Nonaddition	More noise level rules	SA: Added "20" and also corrected wording (Was, "….trust	RTI: See 91.1 Applicability statement.

Section	Title	Summary of Part	Notes/RLV Questions	Applicability
	Rule.		partnership…" and "…(g)(l)(I) or (ii)…")	
91.857	Stage 2 Operations Outside Of The 48 Contiguous United States, And Authorization For Maintenance.	Must state will not provide transportation U.S. airport and will obtain permission to fly to get maintenance	SA: Added "20."	RTI: See 91.1 Applicability statement.
91.859	Modification To Meet Stage 3 Noise Levels.	May apply for authorization to obtain modifications to meet stage 3	SA: Added "20."	RTI: See 91.1 Applicability statement.
91.861	Base Level.	Base level of U.S. operator is equal to number of owned or leased stage 2 aircraft subject to 91.801; foreign carriers…	SA: Added "20."	RTI: See 91.1 Applicability statement.
91.863	Transfers Of Stage 2 Airplanes With Base Level.	Stage 2 aircraft can be transferred with or without corresponding amount of base level. Base level may not be transferred without the corresponding number of stage 2 aircraft.	SA: Added "20."	RTI: See 91.1 Applicability statement.
91.865	Phased Compliance For Operators With Base Level.	Self-explanatory	SA: Added "20."	RTI: See 91.1 Applicability statement.
91.867	Phased Compliance For New Entrants.	Self-explanatory	SA: Added "20."	RTI: See 91.1 Applicability statement.
91.869	Carry-Forward Compliance.	Can claim credit - date contingent	SA: Added "20" and corrected date.	RTI: See 91.1 Applicability statement.
91.871	Waivers From Interim Compliance	Any U.S. operator or foreign air carrier subject may request a waiver for any individual	SA: Added "20."	RTI: See 91.1 Applicability statement.

Section	Title	Summary of Part	Notes/RLV Questions	Applicability
	Requirements.	compliance requirement		
91.873	Waivers From Final Compliance.	U.S. carrier can apply for waiver from prohibition for remaining stage 2 if by 1999 at least 85% of fleet will comply with stage 3	SA: Added "20" and corrected "was."	RTI: See 91.1 Applicability statement.
91.875	Annual Progress Reports.	Annual report due to FAA Office of Environment and Energy, on progress toward complying with stage requirements	SA: Added "20."	RTI: See 91.1 Applicability statement.
91.877	Annual Reporting Of Hawaiian Operations.	Report due annually on compliance with Hawaiian operations provisions	SA: Added "20."	RTI: See 91.1 Applicability statement.
91.878--91.899	[Reserved]			
Subpart J--Waivers		The Administrator May Issue A Certificate Of Waiver Authorizing The Operation Of Aircraft In Deviation From Any Rule Listed In This Subpart If The Administrator Finds That The Proposed Operation Can Be Safely Conducted Under The Terms Of That Certificate Of Waiver. An Application For A Certificate Of Waiver Under This Part Is Made On A Form And In A Manner Prescribed By The Administrator And May Be Submitted To Any FAA Office. A Certificate Of Waiver Is Effective As Specified In That Certificate Of Waiver.		
91.901	[Reserved]			
91.903	Policy And Procedures.	Administrator can issue a certificate of waiver authorizing the operation of aircraft in deviation from any rule listed in this Subpart if Administrator finds that the proposed operation can be safely conducted under the terms of the waiver.		RTI: See 91.1 Applicability statement.

Section	Title	Summary of Part	Notes/RLV Questions	Applicability
91.905	List Of Rules Subject To Waivers.	**Sec. 91.107** Use of safety belts. **91.111** Operating near other aircraft. **91.113** Right-of-way rules: Except water operations. **91.115** Right-of-way rules: Water operations. **91.117** Aircraft speed. **91.119** Minimum safe altitudes: General. **91.121** Altimeter settings. **91.123** Compliance with ATC clearances and instructions. **91.125** ATC light signals. **91.126** Operating on or in the vicinity of an airport in Class G airspace. **91.127** Operating on or in the vicinity of an airport in Class E airspace. **91.129** Operations in Class D airspace. **91.130** Operations in Class C airspace. **91.131** Operations in Class B airspace. **91.133** Restricted and prohibited areas. **91.135** Operations in Class A airspace. **91.137** Temporary flight restrictions. **91.141** Flight restrictions in the proximity of the Presidential and other parties. **91.143** Flight limitation in the proximity of space flight operations. **91.153** VFR flight plan: Information required. **91.155** Basic VFR weather minimums **91.157** Special VFR weather minimums. **91.159** VFR cruising altitude or flight level. **91.169** IFR flight plan: Information required. **91.173** ATC clearance and flight plan required. **91.175** Takeoff and landing under IFR. **91.177** Minimum altitudes for IFR operations. **91.179** IFR cruising altitude or flight level. **91.181** Course to be flown. **91.183** IFR radio communications. **91.185** IFR operations: Two-way radio communications failure. **91.187** Operation under IFR in controlled airspace: Malfunction reports. **91.209** Aircraft lights. **91.303** Aerobatic flights. **91.305** Flight test areas. **91.311** Towing: Other than under **§91.309. 91.313(e)** Restricted category civil aircraft: Operating limitations. **91.515** Flight altitude rules. **91.705** Operations within the North Atlantic Minimum Navigation Performance Specifications Airspace. **91.707** Flights between Mexico or Canada and the United States. **91.713** Operation of civil aircraft of Cuban registry. RTI: See 91.1 Applicability statement.		
91.907--91.999	[Reserved]			
App A to Part 91	Category II Operations: Manual, Instruments, Equipment, And Maintenance	Appendix's primarily elaborate on Subparts. An applicant for approval of a Category II manual or an amendment to an approved Category II manual must submit the proposed manual or amendment to the Flight Standards District Office having jurisdiction of the area in which the applicant is located. The instruments and equipment listed in this section must be installed in each aircraft operated in a Category II operation. This	FAA: Define required instruments and Instruments and Equipment approval and the Maintenance program	FAA: partially applicable RTI: See 91.1 Applicability statement.

Section	Title	Summary of Part	Notes/RLV Questions	Applicability
		section does not require duplication of instruments and equipment required by §91.205 or any other provisions of this chapter. Lists the instruments and equipment required before being used in Category II operations. Directs a list of procedural items and schedules for each maintenance program be submitted.		
App B to Part 91	Authorizations To Exceed Mach 1 (91.817)	An applicant for an authorization to exceed Mach 1 must apply in a form and manner prescribed by the Administrator and must comply with this appendix.	FAA: RLV supersonic operations SA: Added "20", aerospaceplane and verbiage "RLV Flight Series" - RLV supersonic series must be approved also.	FAA: applicable RTI: See 91.1 Applicability statement.
App C to Part 91	Operations In The North Atlantic (NAT) Minimum Navigation Performance Specifications (MNPS) Airspace	This section lists the navigation performance capability required for aircraft to be operated in NAT MNPS airspace. NAT MNPS airspace is that volume of airspace between FL 285 and FL 420 extending between latitude 27 degrees north and the North Pole, bounded in the east by the eastern boundaries of control areas Santa Maria Oceanic, Shanwick Oceanic, and Reykjavik Oceanic and in the west by the western boundary of Reykjavik Oceanic Control Area, the western boundary of Gander Oceanic Control Area, and the western boundary of New York Oceanic Control Area, excluding the areas west of 60 degrees		RTI: See 91.1 Applicability statement.

Section	Title	Summary of Part	Notes/RLV Questions	Applicability
		west and south of 38 degrees 30 minutes north.		
App D to Part 91	Airports/Locations: Special Operating Restrictions	List locations at which the requirements of §91.215(b)(2) under the Subpart titled ATC transponder and altitude reporting equipment and use apply. (In the airspace from the surface to 10,000 feet MSL within a 10-nautical-mile radius of any airport listed in this appendix excluding the airspace below 1,200 feet outside of the lateral boundaries of the surface area of the airspace designated for that airport.)		RTI: See 91.1 Applicability statement.
App E to Part 91	Airplane Flight Recorder Specifications			FAA: applicable RTI: See 91.1 Applicability statement.
App F to Part 91	Helicopter Flight Recorder Specifications			RTI: See 91.1 Applicability statement.
App G to Part 91	Operations In Reduced Vertical Separation Minimum (RVSM) Airspace	Within RVSM airspace, ATC separates aircraft by a minimum of 1,000 feet vertically between flight level (FL) 290 and FL 410 inclusive. RVSM airspace is special qualification airspace; the Administrator must approve the operator and the aircraft used by the operator. Air-traffic control notifies operators of RVSM by providing route-planning info.		RTI: See 91.1 Applicability statement.
SFAR No.	Special Flight	Special operating rules for aircraft	FAA: Add other populated	FAA: Similar restrictions may

Section	Title	Summary of Part	Notes/RLV Questions	Applicability
50 -2	Rules In The Vicinity Of The Grand Canyon National Park, AZ	operating in Grand Canyon Park Special Flight Rules Area.	areas? RTI: Spirit of this rule most likely involves deconflicting of sightseeing aircraft /natural to avoid collisions and resources protection - should still apply to RLVs in the ATC environment. NOTE: ALL FAR parts applying to RLVs will need verbiage update (i.e. add "RLV", "aerospaceplane", "aerospacecraft", "spacecraft" or whatever the "community" finally Agrees on).	be needed RTI: All special flight rules should apply to any RLVs if having same compatibility and flight characteristics as other participating aircraft in the ATC system if operating in ATC environment (SFARs 50 - 94) unless waiverable and waiver is requested and approved by the administrator. (See Part 91.905 for list of waiverable sections).
SFAR No. 51 -1	Special Flight Rules In The Vicinity Of Los Angeles International Airport	Establishes a special operating area for aircraft under VFR rules in L.A. Class B airspace	FAA: Add other populated areas? RTI: The spirit of this regulation most likely involves flight over an area with known deconfliction issues. Don't suggest addition of other populated areas unless all aircraft and thus RLVs are affected and FAA has identified these areas using same criteria as for this part UNLESS the "Ec debate" determines differing criteria for RLVs then over flight of populated areas may need revision otherwise same application as those for "like" aircraft.	FAA: similar restrictions may be needed RTI: All special flight rules should apply to any RLVs if having same compatibility and flight characteristics as other participating aircraft in the ATC system if operating in ATC environment (SFARs 50 - 94) unless waiverable and waiver is requested and approved by the administrator. (See Part 91.905 for list of waiverable sections).
SFAR No. 60	Air Traffic Control System Emergency Operation	National Air Traffic Reduced Complement Operations Plan. This Special Federal Aviation Regulation authorizes special provisions for the operation of the		FAA: similar restrictions may be needed RTI: All special flight rules should apply to any RLVs if having same compatibility and

Section	Title	Summary of Part	Notes/RLV Questions	Applicability
		ATC system during the period that the emergency conditions exist in order to provide for the safe and orderly movement of air traffic. The Director may activate the National Air Traffic Reduced Complement Operations Plan at any time he finds that it is necessary for the safety and efficiency of the National Airspace System. Upon activation of the RCOP and notwithstanding any provision of the FAR to the contrary, the Director is authorized to suspend or modify any airspace designation.		flight characteristics as other participating aircraft in the ATC system if operating in ATC environment (SFARs 50 - 94) unless waiverable and waiver is requested and approved by the administrator. (See Part 91.905 for list of waiverable sections).
SFAR No. 61 -2	Prohibition Against Certain Flights Between The United States And Iraq	Self-explanatory		RTI: All special flight rules should apply to any RLVs if having same compatibility and flight characteristics as other participating aircraft in the ATC system if operating in ATC environment (SFARs 50 - 94) unless waiverable and waiver is requested and approved by the administrator. (See Part 91.905 for list of waiverable sections).
SFAR No. 65 -1	Prohibition Against Certain Flights Between The United States And Libya	self-explanatory		RTI: All special flight rules should apply to any RLVs if having same compatibility and flight characteristics as other participating aircraft in the ATC system if operating in ATC environment (SFARs 50 - 94) unless waiverable and waiver is

Section	Title	Summary of Part	Notes/RLV Questions	Applicability
				requested and approved by the administrator. (See Part 91.905 for list of waiverable sections).
SFAR No. 71	Special Operating Rules For Air Tour Operators In The State Of Hawaii	self-explanatory		RTI: All special flight rules should apply to any RLVs if having same compatibility and flight characteristics as other participating aircraft in the ATC system if operating in ATC environment (SFARs 50 - 94) unless waiverable and waiver is requested and approved by the administrator. (See Part 91.905 for list of waiverable sections).
SFAR No. 77	Prohibition Against Certain Flights Within The Territory And Airspace Of Iraq	self-explanatory		RTI: All special flight rules should apply to any RLVs if having same compatibility and flight characteristics as other participating aircraft in the ATC system if operating in ATC environment (SFARs 50 - 94) unless waiverable and waiver is requested and approved by the administrator. (See Part 91.905 for list of waiverable sections).
SFAR No. 78	Special Operating Rules For Commercial Air Tour Operators In The Vicinity Of The Rocky Mountain National Park	Self-explanatory		RTI: All special flight rules should apply to any RLVs if having same compatibility and flight characteristics as other participating aircraft in the ATC system if operating in ATC environment (SFARs 50 - 94) unless waiverable and waiver is requested and approved by the administrator. (See Part 91.905 for list of waiverable sections).

Section	Title	Summary of Part	Notes/RLV Questions	Applicability
SFAR No. 79	Prohibition Against Certain Flights Within The Flight Information Region (FIR) Of The Democratic People's Republic Of Korea (DPRK)	Self-explanatory		RTI: All special flight rules should apply to any RLVs if having same compatibility and flight characteristics as other participating aircraft in the ATC system if operating in ATC environment (SFARs 50 - 94) unless waiverable and waiver is requested and approved by the administrator. (See Part 91.905 for list of waiverable sections).
SFAR No. 87	Prohibition Against Certain Flights Within The Territory And Airspace Of Ethiopia	Self-explanatory		RTI: All special flight rules should apply to any RLVs if having same compatibility and flight characteristics as other participating aircraft in the ATC system if operating in ATC environment (SFARs 50 - 94) unless waiverable and waiver is requested and approved by the administrator. (See Part 91.905 for list of waiverable sections).
SFAR No. 94	Enhanced Security Procedures For Operations At Certain Airports In The Washington, DC Metropolitan Area Special Flight Rules Area	Self-explanatory		RTI: All special flight rules should apply to any RLVs if having same compatibility and flight characteristics as other participating aircraft in the ATC system if operating in ATC environment (SFARs 50 - 94) unless waiverable and waiver is requested and approved by the administrator. (See Part 91.905 for list of waiverable sections).
SFAR No. 95	Airspace And Flight Operations Requirements	Self-explanatory	RTI: If still in effect it would apply to any RLV operating within the ATC environment.	RTI: All special flight rules should apply to any RLVs if having same compatibility and

Section	Title	Summary of Part	Notes/RLV Questions	Applicability
	For The 2002 Winter Olympic Games, Salt Lake City, Utah			flight characteristics as other participating aircraft in the ATC system if operating in ATC environment (SFARs 50 - 94) unless waiverable and waiver is requested and approved by the administrator. (See Part 91.905 for list of waiverable sections).

14 CFR 135 Operating Requirements: Commuter and On Demand Operations and Rules Governing Persons on Board Such Aircraft

Effective Date	05/23/02
Contents and review purpose	This FAR part contains operating requirements for commuter and on-demand operations. The rule also applies to persons on board. This FAR was reviewed for applicability in the RLV domain.

Subpart A -- General

Section	Title	Summary of Part	Notes/RLV Questions
This Subpart presents the general guidance for these services. A key item in this Subpart is the requirement to develop and maintain the carrier's operations manual. This manual requirement applies to the RLV O&M with some modifications. An RLV specific manual guideline should be developed highlighting the key issues in development of safety standards.			
135.1	Applicability.	Each person who holds or is required to hold an Air Carrier or Operating Cert under Part 119, or those performing proving tests	May apply with modifications to passenger carrier RLVs or trucking service such as the Orient Express was to provide, distance provisions are not applicable to RLV
135.2	Compliance Schedule For Operators That Transition To Part 121 Of This Chapter; Certain New Entrant Operators.	Applicability, Obtaining operations specifications, Regular or accelerated compliance, and delayed compliance dates. Numerous references to Part 121 for requirements.	not applicable to RLVs
135.3	Rules Applicable To Operations Subject To This Part.	Summarizes who this applies to while flying inside the US and outside the US	not applicable to RLVs
135.7	Applicability Of Rules To Unauthorized Operators.	Rules in this Part apply whether you are certified or not.	Applicable wording for RLV operators
135.12	Previously Trained Crewmembers.	If certified before Mar 19, 1997 then they don't have to meet initial training and qualification requirements, but they must comply with recurring training.	Once training criteria have been established for RLV operators this may apply. However, it could be argued that RLV systems are too complicated to relieve and initial training requirements.
135.19	Emergency Operations.	The pilot has latitude to deviate if safety of persons or property is involved. Must report in 10 days to FAA.	This applies with modifications to a piloted RLV and Unmanned but remotely piloted. This may depend on the RLV Generation and CONOPS of "flying" RLVs in the NAS. Need to talk to "winged" RLVs

Section	Title	Summary of Part	Notes/RLV Questions
135.21	Manual Requirements.	An operations manual is required. Deviations may be authorized. The Manual must comply with FAA guidelines. Must be made available to maintenance and ground personnel.	Applies with modifications to all RLV types.
135.23	Manual Contents.	Summarizes the manual's content	An RLV specific manual with applicable content should be developed. What will be key issues in development of safety standards for O&M?
135.25	Aircraft Requirements.	No aircraft can be used in this function unless it meets the other FAA airworthiness criteria.	Similar text should be developed for RLVs.
135.41	Carriage Of Narcotic Drugs, Marihuana, And Depressant Or Stimulant Drugs Or Substances.	No narcotics, drugs	Same for RLVs
135.43	Crewmember Certificates: International Operations.	Facilitates entry and clearance of crewmembers into other contracting states.	Similar application for Orient Express type operations. What type of Operator Services will be marketed that must be regulated in an international arena?
Subpart B -- Flight Operations		Subpart B Outlines Rules, In Addition To Those In Part 91, That Apply To Operations. It Calls Out The Necessity To Develop And Maintain Records For The Air Carrier's Service. These Include Mechanical Irregularities, Airworthiness Checks, Inspections And Tests. Additionally, This Subpart Defines The Requirements For Pilots And Co-Pilots While Under Certain Flying Conditions As Well As Autopilot. RLVs Will For The Foreseeable Future Always Have A "Flight Plan" Trajectory For Launch Satisfying Space Requirements.	
135.61	General.	Prescribes rules in addition to Part 91 that apply to operations under this part.	

Section	Title	Summary of Part	Notes/RLV Questions
135.63	Record Keeping Requirements.	List of required records to be kept at home office or other approved location. Operating certificate operations specs current list of aircraft individual record of each pilot used in operations individual record for each flight attendant keep for at least 6 months load manifest	Applies with modifications to RLVs.
135.64	Retention Of Contracts And Amendments: Commercial Operators Who Conduct Intrastate Operations For Compensation Or Hire.	Deals with intrastate operations	May be applicable with modifications depending on mode of RLV operations.
135.65	Reporting Mechanical Irregularities.	Each aircraft shall have record of maintenance and any irregularities.	Applicable with modifications to RLV O&M.
135.67	Reporting Potentially Hazardous Meteorological Conditions And Irregularities Of Communications Or Navigation Facilities.	Pilot to notify ground stations of irregularities in potentially hazardous meteorological conditions and irregularities of communications or navigation facilities conditions.	RLVs may or may not be telemetering to the ground their status and this may apply with modifications.
135.69	Restriction Or Suspension Of Operations: Continuation Of Flight In An Emergency.	Take off or landing or operations may be suspended if adverse conditions prevail.	Applicable to RLVs
135.71	Airworthiness Check.	Pilot responsible for Airworthiness checks required by 91.409 or 135.419 and cannot fly until met.	Applies with modifications to RLVs.
135.73	Inspections And Tests.	Compliance inspections any time or place.	Applicability to RLVs
135.75	Inspectors Credentials:	Inspector access to pilot compartment.	Applicable with modifications to RLV.

Section	Title	Summary of Part	Notes/RLV Questions
	Admission To Pilots' Compartment: Forward Observer's Seat.		
135.77	Responsibility For Operational Control.	Requires listing in Manual who can have ops control.	Applies with modifications to RLVs.
135.79	Flight Locating Requirements.	Location requirements if no Flight Plan. Each cert holder must have procedures for locating each flight, info shall be retained at primary place of business or designated place, furnish to FAA	Not applicable, RLVs will always have a flight plan
135.81	Informing Personnel Of Operational Information And Appropriate Changes.	Inform each person in employment of the ops specs that apply to their position.	Applies with modifications to RLVs.
135.83	Operating Information Required.	The aircraft operator must provide the pilot the specified list of items: i.e. Checklists etc.	Applicable with modifications
135.85	Carriage Of Persons Without Compliance With The Passenger-Carrying Provisions Of This Part.	List of persons that can be aboard without passenger carrying provisions.	Not applicable since the travel is to space and will require, always passenger carrying provisions.
135.87	Carriage Of Cargo Including Carry-On Baggage.	Lists how cargo and carry on will be handled	Applicable with modifications for RLV passenger carriers.
135.89	Pilot Requirements: Use Of Oxygen.	Pressurization and non-pressurization requirements	Applies with modifications, such as Space Suit
135.91	Oxygen For Medical Use By Passengers.	How medical oxygen is to be handled and transported on the aircraft.	Applicable with modifications. RLVs have their own set of space requirements
135.93	Autopilot: Minimum Altitudes For Use.	Outlines minimum altitude conditions of autopilots use.	Applicable with modifications. RLVs have their own set of space requirements
135.95	Airmen: Limitations On Use Of Services.	Only certified persons may be used as crew.	Applicable with modifications
135.97	Aircraft And Facilities For Recent Flight Experience.	Allow pilots to maintain and demonstrate operations.	Not applicable

Section	Title	Summary of Part	Notes/RLV Questions
135.99	Composition Of Flight Crew.	Must have the crew stated in Ops Manual	Applicable with modifications
135.100	Flight Crewmember Duties.	Flight crew must be free from distractions	Applicable with modifications
135.101	Second In Command Required Under IFR.	Can only fly IFR is second in command is present.	Applicable
135.103	[Reserved]		
135.105	Exception To Second In Command Requirement: Approval For Use Of Autopilot System.	Can fly with one in command if on Autopilot.	Not applicable.
135.107	Flight Attendant Crewmember Requirement.	If 19 passengers or more, must have flight attendant.	Not applicable
135.109	Pilot In Command Or Second In Command: Designation Required.	Must have a pilot and second in command designated.	Applies
135.111	Second In Command Required In Category II Operations.	Can only fly in Cat II if second in command present.	Will there be such Categories for RLVs?
135.113	Passenger Occupancy Of Pilot Seat.	Must have pilot in the pilot seat.	Applies
135.115	Manipulation Of Controls.	Only a pilot or second can command aircraft	Applies with modifications
135.117	Briefing Of Passengers Before Flight.	Briefing items to tell passengers.	May be applicable.
135.119	Prohibition Against Carriage Of Weapons.	Can't carry weapons on board	Applies with modifications.
135.120	Prohibition On Interference With Crewmembers.	No person shall interfere with crewmembers	Applies to RLV
135.121	Alcoholic Beverages.	Only Air Carrier can serve alcohol	Not applicable.
135.122	Stowage Of Food, Beverage, And Passenger Service	As name implies	May not be applicable

Section	Title	Summary of Part	Notes/RLV Questions
	Equipment During Aircraft Movement On The Surface, Takeoff, And Landing.		
135.123	Emergency And Emergency Evacuation Duties.	Crewmember responsibility for emergency	Applies with modifications to RLV
135.125	Aircraft Security.	Must comply with security	Applies to RLV
135.127	Passenger Information Requirements And Smoking Prohibitions.	Smoking issues	Not applicable.
135.128	Use Of Safety Belts And Child Restraint Systems.	As is implied by name	Passenger restraint system is required in RLVs. Child restraint is probably not a concern for RLVs in the near future
135.129	Exit Seating.	Requirements for exit row seating	Not applicable to RLV
Subpart C -- Aircraft and Equipment		This Subpart Defines Aircraft And Equipment Requirements For Operations Under This Part. The Requirements Of This Subpart Are In Addition To Those In Part 91. Aircraft Proving Tests May Not Be Applicable To RLVs In The Near Term Since They Will Not Be Piloted Under VFR. The Equipment Requirements Are Partly Applicable. These Requirements May Be Particular To An RLV Concept, Its Concept Of Operations, And Technology. Flight Recording Requirements May Be Satisfied Via Telemetry Vice A “Black Box”.	
135.141	Applicability.	Prescribes aircraft and equipment under this part in addition to those in Part 91	Applicable with modifications
135.143	General Requirements.	Equipment must be operating.	Applicable
135.144	Portable Electronic Devices.	No portable electronic devices allowed to operate	Applicable
135.145	Aircraft Proving Tests.	To be operated, the aircraft or one similar must have undergone certain hours of tests	Not applicable at this time due to VFR considerations. Will RLVs be operated under VFR in any of the anticipated phases or CONOPS?
135.147	Dual Controls Required.	Must have dual controls for 2 pilots.	Applicable

Section	Title	Summary of Part	Notes/RLV Questions
135.149	Equipment Requirements: General.	Requires altimeter, heating/deicing, and 2 gyros	Partly applicable. These are particular to the RLV concept, CONOPS and technology. Must be able to determine altitude, orientation and have use of control surfaces
135.150	Public Address And Crewmember Interphone Systems.	Public address system required	Modifications needed, may be applicable for tourist flights
135.151	Cockpit Voice Recorders.	Certain aircraft types must have voice recorder	Applicable, Will the recorder be on board or continuous radio contact with ground and recorded there?
135.152	Flight Recorders.	Certain aircraft types must have flight recorder	Applicable with modifications, Will the recorder be on board or continuous telemetry contact with ground and recorded there?
135.153	Ground Proximity Warning System.	Aircraft must have a ground proximity system	May be applicable with modifications. Will this apply to VFR and autopilot control?
135.154	Terrain Awareness And Warning System.	Aircraft must have a terrain situational awareness system	May be applicable with modifications. Will this apply to VFR and autopilot control?
135.155	Fire Extinguishers: Passenger-Carrying Aircraft.	Must be equipped with hand held fire extinguishers	Not applicable at this time, perhaps with modifications
135.157	Oxygen Equipment Requirements.	Unpressurized and pressurized aircraft oxygen requirements.	Environmental situation based on technology and RLV concept design.
135.158	Pitot Heat Indication Systems.	Required on aircraft	Not applicable
135.159	Equipment Requirements: Carrying Passengers Under VFR At Night Or Under VFR Over-The-Top Conditions.	Equipment requirements while flying VFR with passengers	Not applicable. Will RLVs be operated under VFR in any of the anticipated phases or CONOPS?
135.161	Radio And Navigational Equipment: Carrying Passengers Under VFR At Night Or Under VFR Over-The-Top.	Requirements for radio and navigation equipment	Applicable with modifications. Will RLVs be operated under VFR in any of the anticipated phases or CONOPS?

Section	Title	Summary of Part	Notes/RLV Questions
135.163	Equipment Requirements: Aircraft Carrying Passengers Under IFR.	Equipment requirements for IFR with passengers	Applicable with modifications
135.165	Radio And Navigational Equipment: Extended Overwater Or IFR Operations.	Requirements for radio and navigation equipment flying IFR	Applicable with modifications
135.167	Emergency Equipment: Extended Overwater Operations.	Life raft and survival equipment requirements	Applicable with modifications. This applies to over water; however there may be space specific requirements. What escape mechanisms are required for space flight? Does Shuttle provide any lessons learned regarding this?
135.169	Additional Airworthiness Requirements.	Refers to Appendix A. Additional standards include: Performance, Trim, Stalls, Control Systems, Instruments, Operating Limitations, Airplane Flight Manual. Airframe Requirements: flight loads, ground loads, Fatigue Evaluation, Design and Construction, Landing Gear, Personnel and Cargo Accommodations, Miscellaneous. Propulsion: General, Fuel System Components, Cooling, Induction System, Exhaust System, Powerplant Controls and Accessories, Powerplant Fire Protection, Equipment. Systems and Equipment: General, Electrical Systems and Equipment	Applicable with developed RLV standards employed
135.170	Materials For Compartment Interiors.	Refers to 28.853 for materials and flame resistant material for interior compartment, also discusses galley carts, etc.	Applicable with modifications, however, RLV/spacecraft materials are the required material because of the internal atmosphere the materials will need to be extremely non-combustible
135.171	Shoulder Harness Installation At Flight Crewmember Stations	Requirements to have the shoulder harnesses	Applicable with modifications for RLVs, RLVs will have special seats due to flight environment of high G and, vibrations, and stresses

Section	Title	Summary of Part	Notes/RLV Questions
135.173	Airborne Thunderstorm Detection Equipment Requirements	Requirement to have thunderstorm detection system	May be applicable for RLVs
135.175	Airborne Weather Radar Equipment Requirements.	Requirement to have weather radar detection system	May be applicable for RLVs
135.177	Emergency Equipment Requirements For Aircraft Having A Passenger-Seating Configuration Of More Than 19 Passengers.	First aid kit for more than 19 passengers	Applicable with modifications, RLVs and spacecraft will have emergency evacuation and escape systems. The Shuttle may have Lessons Learned. What abort or escape systems will be utilized?
135.178	Additional Emergency Equipment.	Emergency evacuation and exiting requirements	Applicable with modifications, RLVs and spacecraft will have emergency evacuation and escape systems. The Shuttle may have Lessons Learned. What abort or escape systems will be utilized?
135.179	Inoperable Instruments And Equipment.	Minimum Equipment List definition	Applicable with modifications
135.180	Traffic Alert And Collision Avoidance System.	Aircraft with 10-30 seats are required to have traffic alert and collision avoidance system	May not be applicable in first phase of regulatory work but depending on CONOPS, it may
135.181	Performance Requirements: Aircraft Operated Over-The-Top Or In IFR Conditions.	Requirements for flying over-the-top.	Not applicable
135.183	Performance Requirements: Land Aircraft Operated Over Water.	Over water flight requirements and restrictions	Not applicable
135.185	Empty Weight And Center Of Gravity: Currency Requirement.	Time requirement of currency for empty weight and CG	Not applicable without modifications

Section	Title	Summary of Part	Notes/RLV Questions
Subpart D -- VFR/IFR Operating Limitations and Weather Requirements		Subpart D Prescribes The Operating Limitations For VFR And IFR Flight As Well As Associated Weather Requirements For Operations. It Identifies VFR And IFR Altitudes For Take Off And Landing. While These May Have Some Applicability RLVs Won't Be Flown VFR. It Also Covers The Requirements For A Secondary Landing Site. The Applicability Of Alternate Landing Sites Must Account For Cross Range And Downrange Capability Of An RLV Concept. This Subpart May Not Be Applicable At All If The CONOPS For RLVs Is To Utilize Restricted Corridors Or Special Flight Sectors.	
135.201	Applicability.	VFR/IFR flight ops and associated requirements	
135.203	VFR: Minimum Altitudes.	Specifies minimum VFR altitudes	Not applicable in early RLV
135.205	VFR: Visibility Requirements.	Specifies VFR Visibility Requirements	Not applicable in early RLV
135.207	VFR: Helicopter Surface Reference Requirements.		Not applicable in early RLV
135.209	VFR: Fuel Supply.	Bad weather fuel requirements	Not applicable in early RLV
135.211	VFR: Over-The-Top Carrying Passengers: Operating Limitations.	Prohibits over-the-top carrying passengers unless specific conditions are met	Not applicable in early RLV
135.213	Weather Reports And Forecasts.	Must use National Weather Service if required to use a weather report	May be applicable with modifications
135.215	IFR: Operating Limitations.	Limits from flying IFR outside controlled airspace, may do so if certified to do those operations and meet criteria	May not apply to initial RLVs
135.217	IFR: Takeoff Limitations.	Limits takeoffs under IFR from airport where weather conditions are at or above takeoff minimums	May be applicable with modifications
135.219	IFR: Destination Airport Weather Minimums.	May not takeoff if the weather is bad at destination airport at time of projected arrival	Needs modifications for RLV returns
135.221	IFR: Alternate Airport Weather Minimums.	Weather must be good at alternate airport	Needs modifications for RLV returns
135.223	IFR: Alternate Airport Requirements.	Must have enough fuel to land at primary site, or alternate site, or fly 45 minutes under normal cruising speed	May not be applicable, modify for alternate recovery sites

Section	Title	Summary of Part	Notes/RLV Questions
135.225	IFR: Takeoff, Approach And Landing Minimums.	requirements for takeoff, approach and landing	May not be applicable, modify for alternate recovery sites
135.227	Icing Conditions: Operating Limitations.	Deicing requirements	Modify for RLVs
135.229	Airport Requirements.	Airport must be suited for the aircraft operations	Modify for RLVs
Subpart E -- Flight Crewmember Requirements		In General This Subpart Covers The Requirements For The Pilot In Command And Their Operating Experience, The Second In Command Qualifications, And General Pilot Qualifications, As Well As The Prohibition Of Alcohol And Drug Use. More Specific Astronaut/RLV Pilot Requirements Will Be Required In The Stressing Space Environment.	
135.241	Applicability.	Prescribes the flight crewmember requirements.	Needs modifications for RLV flight
135.243	Pilot In Command Qualifications	Must have an airline transport pilot certificate with appropriate category and class ratings, to include specific flight time	Must be modified for RLV pilots and crew. See Astronaut rating program.
135.244	Operating Experience.	Specifies aircraft type (i.e. Single engine, multi, turbo…) and the hours of experience in each in order to be designated a pilot in command of that type of aircraft.	Applicable, needs modifications to meet RLV/astronaut requirements.
135.245	Second In Command Qualifications.	Requires second in command to hold a commercial pilot certificate with appropriate category and class ratings and an instrument rating.	Applicable, needs modifications to meet RLV/astronaut requirements.
135.247	Pilot Qualifications: Recent Experience.	In order to use pilot in command, must in last 90 days made 3 take-offs and 3 landings as sole manipulator in same category and class of vehicle, for 1 hour after sunset or 1 hour before sunrise operations must have 3 take-offs and landings in that condition	This is a more specific requirement to the flight type. Must be modified for RLV/space flight.
135.249	Use Of Prohibited Drugs.	Don't use illegal drugs or drugs which are prohibited by the FAA for safety considerations.	This is a more specific requirement to the flight type. Must be modified for RLV/spaceflight.

Section	Title	Summary of Part	Notes/RLV Questions
135.251	Testing For Prohibited Drugs.	Comply with Part 121 testing requirements	Needs modifications for RLV flight
135.253	Misuse Of Alcohol.	This Subpart covers these topics: Alcohol concentration: must be below .04 while operating, On-duty use: can't perform duties if consumed alcohol 8 hours prior to duty, Use following and accident: can't drink 8 hours following an accident, Refusal to submit to a required alcohol test: can't refuse a test.	Needs modifications for RLV flight
135.255	Testing For Alcohol.	Each cert holder must have an alcohol misuse prevention program.	Needs modifications for RLV flight
Subpart F -- Crewmember Flight Time and Duty Period Limitations and Rest Requirements		This Subpart Defines The Flight Time Limitations And Rest Requirements For Certification Holders And Their Aircrews. This Includes Scheduled And Unscheduled Flights. Additionally, It Specifies Helicopter Emergency Medical Evacuation Services. While Not Directly Applicable To RLV O&M, A Similar Set Of Guidelines Will Be Needed As RLV Flights Become More Frequent And Also Is Dependent On The RLV Concept.	
135.261	Applicability.	Parts 135.263 thru 135.273 prescribe flight time limits, duty period limits and rest requirements	Applicable with modifications
135.263	Flight Time Limitations And Rest Requirements: All Certificate Holders.	Can't have crew member be assigned duty on rest, loitering time is not considered rest time,	Applicable eventually when frequency increases for RLVs
135.265	Flight Time Limitations And Rest Requirements: Scheduled Operations.	Prescribes flight time limits and rest requirements in a 24 period, calendar month, consecutive days.	Must be modified for RLVs.
135.267	Flight Time Limitations And Rest Requirements: Unscheduled One- And Two-Pilot Crews.	For Unscheduled 1 and 2 pilot crews, prescribes flight time limits and rest requirements in a 24 period, calendar month, and consecutive days.	Must be modified for RLVs.
135.269	Flight Time Limitations And Rest Requirements: Unscheduled Three- And Four-Pilot Crews.	For Unscheduled 3 and 4 pilot crews, prescribes flight time limits and rest requirements in a 24 period, calendar month, and consecutive days.	Must be modified for RLVs.

Section	Title	Summary of Part	Notes/RLV Questions
135.271	Helicopter Hospital Emergency Medical Evacuation Service (HEMES).	For helicopter hospital emergency evacuation pilot crews, prescribes flight time limits and rest requirements in a 24 period, calendar month, consecutive days.	Dependent on freq and concept design (i.e. Roton), needs modifications for any RLV
135.273	Duty Period Limitations And Rest Time Requirements.	prescribe flight time limits, duty period limits and rest requirements	Applicable when RLV flights are more freq, needs modifications
Subpart G -- Crewmember Testing Requirements		Subpart G Develops The Requirements For Tests And Checks For Pilots And Flight Attendant Crewmembers. It Also Permits Training Center Personnel To Provide Training, Testing, And Checking Under Contract. Here Are Initial And Recurrent Testing Requirements For Pilots And Flight Attendants. These Are Needed For RLVs, But With Modifications Specific To Operations For RLV Flight.	
135.291	Applicability.	Covers pilots, flight attendant and check pilots	Applicable with modifications
135.293	Initial And Recurrent Pilot Testing Requirements.	Specific testing requirements too lengthy to list. 12 month recurrence	Applicable with modifications
135.295	Initial And Recurrent Flight Attendant Crewmember Testing Requirements.	Lists areas of knowledge and competency in the 12 month period for the flight attendant	May be applicable at a later time.
135.297	Pilot In Command: Instrument Proficiency Check Requirements.	Lists specific instrument proficiency check items	A set of space flight and RLV concept specific requirements will need to be made for each individual concept or application.
135.299	Pilot In Command: Line Checks: Routes And Airports.	Specifies the required for a flight check by another pilot.	May be different for RLV /astronaut requirements
135.301	Crewmember: Tests And Checks, Grace Provisions, Training To Accepted Standards.	Discusses completion if in same calendar month and if a failure occurs.	Applicable with modifications

Section	Title	Summary of Part	Notes/RLV Questions
Subpart H -- Training		This Subpart Requires A Training Program Be Developed. This Includes Curriculum For Initial And Recurring Training. Types Of Training Include: Initial Training, Transition Training (Going From One Aircraft To Another), Upgrade Training (Second In Command), Differences Training (Differences In Aircraft Variation), Recurrent Training (Proficiency), In Flight Training (Actual Flight), And Requalification Training.	Training approach must be developed for the commercial RLV industry that is applicable to space flight. Do we use the existing astronaut training as a model rather than the aircraft side of things?
135.321	Applicability And Terms Used.	If using a contracted training facility is will comply with Part 142. Types of training include: Initial training, transition training (going from one aircraft to another), upgrade training (second in command), Differences training (differences in aircraft variation), recurrent training (proficiency), In Flight training (actual flight), Requal training	Applicable with modifications for RLV. What variations will be made in the astronaut type program for those who are crew versus those that are merely passengers? Have the first 2 "space tourists" set a precedence to follow?
135.323	Training Program: General.	Training required by 135.341 shall provide initial and final approval of and provide training program that meets this Subpart for each crewmember, flight instructor, check airmen and each person assigned duties for carriage and handling hazardous material. Provide ground and flight training facilities, keep current on variations in aircraft, conduct flight training and flight checks and simulator training	Applicable with modifications for RLV.
135.324	Training Program: Special Rules.	Cert holder may contract with a training center certified under Part 142	Applicable with modifications for RLV
135.325	Training Program And Revision: Initial And Final Approval.	Outlines requirements to have initial and final approval of a training program	Applicable with modifications for RLV. Similar approval processes will be established for RLV or carried over from the astronaut program

Section	Title	Summary of Part	Notes/RLV Questions
135.327	Training Program: Curriculum.	Required to maintain and keep current a training program to cover ground training, emergency training, mockups, system trainers, procedure trainers and other aids, normal and abnormal emergency maneuvers for all phases of flight	Applicable with modifications for RLV. Will there be a core competency-training program established and then each concept have their own individual specific training?
135.329	Crewmember Training Requirements.	Describes the requirements for crewmember training and references parts 135.331 for emergency training, parts 135.345 and 135.349 for ground training, part 135.347 for initial and transitional, part 135.351 for recurrent ground and flight training	Applicable with modifications for RLV
135.331	Crewmember Emergency Training.	Establishes the required items for emergency training	Applicable with modifications for RLV
135.333	Training Requirements: Handling And Carriage Of Hazardous Materials.	Lists requirements for handling and carriage of hazardous material to include adequate training by the cert holder	Applicable with modifications for RLV
135.335	Approval Of Aircraft Simulators And Other Training Devices.	Lists requirements for simulators and other training devices	Applicable with modifications for RLV
135.337	Qualifications: Check Airmen (Aircraft) And Check Airmen (Simulator).	Provides detailed qualifications for airmen and check airmen.	Applicable with modifications for RLV
135.338	Qualifications: Flight Instructors (Aircraft) And Flight Instructors (Simulator).	Provides detailed qualifications for flight instructors for both aircraft and simulators	Applicable with modifications for RLV
135.339	Initial And Transition Training And Checking: Check Airmen (Aircraft), Check Airmen (Simulator).	Lengthy requirements for initial and transition training and checking for aircraft and simulator check airmen	Applicable with modifications for RLV

Section	Title	Summary of Part	Notes/RLV Questions
135.340	Initial And Transition Training And Checking: Flight Instructors (Aircraft), Flight Instructors (Simulator).	Lengthy requirements for initial and transition training and checking for aircraft and simulator flight instructors	Applicable with modifications for RLV
135.341	Pilot And Flight Attendant Crewmember Training Programs.	Pilot and flight attendant crewmember training programs will include initial, transition, and upgrade, differences and recurrent training.	Applicable with modifications for RLV
135.343	Crewmember Initial And Recurrent Training Requirements.	Crewmember must be current in last 12 months	Applicable with modifications for RLV
135.345	Pilots: Initial, Transition, And Upgrade Ground Training.	Lengthy requirements for pilot initial, transition and upgrade training	Applicable with modifications for RLV
135.347	Pilots: Initial, Transition, Upgrade, And Differences Flight Training.	Initial, transition, and differences training must include flight and practice in each maneuver and procedure	Applicable with modifications for RLV
135.349	Flight Attendants: Initial And Transition Ground Training.	Requirements for flight attendant initial and transition ground training	Applicable with modifications for RLV
135.351	Recurrent Training.	Each cert holder must ensure each crewmember receives recurrent training and is proficient	Applicable with modifications for RLV
135.353	Prohibited Drugs.	Refers to part 121	Drug prohibition is applicable with for RLVs however part 121 must be reviewed. This section made no mention of drug prohibitions.
Subpart I -- Airplane Performance Operating Limitations		Subpart I Outlines The Requirements For Airplane Performance Operating Limitations For Large Transport, Small Transport, And Commuter Service Aircraft. These Include Weight, Takeoff, And Landing Limitations. While These General Issues Are Required For RLV Flight, Modifications Will Be Required To Encompass RLV Concepts And Their Flight Regime.	

Section	Title	Summary of Part	Notes/RLV Questions
135.361	Applicability.		This set of Subparts might be applicable to place the types of RLVS, i.e. Vertical takeoff-vertical landing, vertical takeoff-horizontal landing, horizontal takeoff-vertical landing, horizontal takeoff-horizontal landing, multi-stage RLVs, This would provide for all types of RLV concepts.
135.363	General.		
135.365	Large Transport Category Airplanes: Reciprocating Engine Powered: Weight Limitations.	Issues for this type of aircraft: max takeoff weight, elevation range must be within limits for max landing weight No person may takeoff reciprocating engine large transport if elevation of airport is out of range for max takeoff weight same for landing applies to alternate airports as well	Needs modifications for RLVS, depends on RLV concept and takeoff/landing configuration
135.367	Large Transport Category Airplanes: Reciprocating Engine Powered: Takeoff Limitations.	Requirements for takeoff, i.e. Stopping safely on runway, critical engine speed, clear obstacles in front must be able to stop safely as shown by acceleration-stop distance data critical engine failure must be able to get to 50 feet at end of runway Must be able to clear all obstacles by 50 ft vertical, 200 ft horizontal 300 ft beyond boundaries	Needs modifications for RLVS, depends on RLV concept and takeoff/landing configuration
135.369	Large Transport Category Airplanes: Reciprocating Engine Powered: En Route Limitations: All Engines Operating.	Specifies climb rate for all engines operating	Needs modifications for RLVS, depends on RLV concept and takeoff/landing configuration
135.371	Large Transport Category Airplanes: Reciprocating Engine Powered: En Route	Defines climb rates etc for one engine inoperative specifies clearance requirements also	Needs modifications for RLVS, depends on RLV concept and takeoff/landing configuration

Section	Title	Summary of Part	Notes/RLV Questions
	Limitations: One Engine Inoperative.		
135.373	Part 25 Transport Category Airplanes With Four Or More Engines: Reciprocating Engine Powered: En Route Limitations: Two Engines Inoperative.	Defines climb rates etc for two engines inoperative specifies clearance requirements also	Needs modifications for RLVS, depends on RLV concept and takeoff/landing configuration
135.375	Large Transport Category Airplanes: Reciprocating Engine Powered: Landing Limitations: Destination Airports.	Must be able to burn fuel at normal consumption to be able to land at primary destination airport with 60% of runway	Needs modifications for RLVS, depends on RLV concept and takeoff/landing configuration
135.377	Large Transport Category Airplanes: Reciprocating Engine Powered: Landing Limitations: Alternate Airports.	Must be able to burn fuel at normal consumption to be able to land at alternate destination airport with 70% of runway	Needs modifications for RLVS, depends on RLV concept and takeoff/landing configuration
135.379	Large Transport Category Airplanes: Turbine Engine Powered: Takeoff Limitations.	Must follow Flight Manual for takeoff weights, discusses wet runways, takeoff runway length limits	Needs modifications for RLVS, depends on RLV concept and takeoff/landing configuration
135.381	Large Transport Category Airplanes: Turbine Engine Powered: En Route Limitations: One Engine Inoperative.	Defines climb rates etc for one engine inoperative specifies clearance requirements also	Needs modifications for RLVS, depends on RLV concept and takeoff/landing configuration
135.383	Large Transport Category Airplanes: Turbine Engine Powered: En Route Limitations: Two Engines Inoperative.	Defines climb rates etc for two engines inoperative specifies clearance requirements also	Needs modifications for RLVS, depends on RLV concept and takeoff/landing configuration

Section	Title	Summary of Part	Notes/RLV Questions
135.385	Large Transport Category Airplanes: Turbine Engine Powered: Landing Limitations: Destination Airports.	Must be able to burn fuel at normal consumption to be able to land at primary destination airport with 60% of runway	Needs modifications for RLVS, depends on RLV concept and takeoff/landing configuration
135.387	Large Transport Category Airplanes: Turbine Engine Powered: Landing Limitations: Alternate Airports.	Must be able to burn fuel at normal consumption to be able to land at alternate destination airport with 70% of runway	Needs modifications for RLVS, depends on RLV concept and takeoff/landing configuration
135.389	Large Non-Transport Category Airplanes: Takeoff Limitations.	Must follow Flight Manual for takeoff weights, discusses wet runways, takeoff runway length limits must be able to be at 105% of minimum control speed or 115% of power off stalling speed at takeoff	Needs modifications for RLVS, depends on RLV concept and takeoff/landing configuration
135.391	Large Non-Transport Category Airplanes: En Route Limitations: One Engine Inoperative.	Defines climb rates etc for one engine inoperative specifies clearance requirements also, 50 ft per minute at an alt of 1,000 ft above highest obstruction	Needs modifications for RLVS, depends on RLV concept and takeoff/landing configuration
135.393	Large Non-Transport Category Airplanes: Landing Limitations: Destination Airports.	Must be able to burn fuel at normal consumption to be able to land at primary destination airport with 60% of runway	Needs modifications for RLVS, depends on RLV concept and takeoff/landing configuration
135.395	Large Non-Transport Category Airplanes: Landing Limitations: Alternate Airports.	Must be able to full stop landing at 70% of runway length based on assumptions in 135.393	needs modifications for RLVS, depends on RLV concept and takeoff/landing configuration
135.397	Small Transport Category Airplane Performance Operating Limitations.	Must comply with 135.365 for weight, 135.367 for takeoff, 135.375&135.377 for landing	needs modifications for RLVS, depends on RLV concept and takeoff/landing configuration

Section	Title	Summary of Part	Notes/RLV Questions
135.398	Commuter Category Airplanes Performance Operating Limitations.	Weight limits must comply with Airplane Flight Manual, must clear 35 ft over obstacles at takeoff & 200 ft horizontal, correct for airport elevation, runway gradient, be 50 ft height with max bank not more than 15 degrees.	needs modifications for RLVS, depends on RLV concept and takeoff/landing configuration
135.399	Small Non-Transport Category Airplane Performance Operating Limitations.	Weight limits must comply with Airplane Flight Manual, comply with landing limits in 135.385 & 135.387	needs modifications for RLVS, depends on RLV concept and takeoff/landing configuration
Subpart J -- Maintenance, Preventive Maintenance, and Alterations		In General This Subpart Defines The Requirements For Maintenance, Preventive Maintenance, And Alterations For Certificate Holders. It Defines The Requirements For Airworthiness, Mechanical Reliability Reports, Mechanical Interruption, Aircraft Inspections And Maintenance, Preventive Maintenance, And Alterations Programs. This Subpart Is Readily Applicable To RLV O&M.	
135.411	Applicability.		
135.413	Responsibility For Airworthiness.	Requirement to be responsible for airworthiness and to perform certain maintenance practices	Applicable
135.415	Mechanical Reliability Reports.	Requirement to report occurrence or detection of each failure, malfunction or defect related to fires, exhaust, engines, fuel, landing gear	Applicable to RLV with modifications
135.416	Service Difficulty Reports (Structural).	Requirement to report occurrence or detection of each failure or defect related to corrosion, cracks, fractures,	Applicable to RLV with modifications
135.417	Mechanical Interruption Summary Report.	Report multiengine aircraft interruption to a flight and propeller featherings.	May be applicable
135.419	Approved Aircraft Inspection Program.	Requirements for aircraft inspection program	Applicable
135.421	Additional Maintenance Requirements.	Requires compliance with the manufacturer's maintenance program as well as FAA approved programs	Applicable

Section	Title	Summary of Part	Notes/RLV Questions
135.423	Maintenance, Preventive Maintenance, And Alteration Organization.	Requires having an organization adequate to perform inspections and maintenance.	Applicable
135.425	Maintenance, Preventive Maintenance, And Alteration Programs.	Each certificate holder shall have an inspection program and a program covering other maintenance, preventive maintenance, and alterations	Applicable
135.427	Manual Requirements.	Requirement to have a maintenance manual meeting a lot of requirements	Applicable
135.429	Required Inspection Personnel.	Inspection personnel must be appropriately certified, properly trained, qualified, and authorized.	Applicable
135.431	Continuing Analysis And Surveillance.	Requirement to establish and maintain a system for analysis and surveillance of performance and effectiveness of inspection program and maintenance program.	Applicable
135.433	Maintenance And Preventive Maintenance Training Program.	Establish a training program for performing maintenance or preventive maintenance functions.	Applicable
135.435	Certificate Requirements.	Anyone directly in charge of maintenance, preventive maintenance, alterations, or inspections must be certified	Applicable
135.437	Authority To Perform And Approve Maintenance, Preventive Maintenance, And Alterations.	Authorizes a certificate holder to perform maintenance and may do so for another certificate holder as provided in the manual.	May not be applicable
135.439	Maintenance Recording Requirements.	Requires keeping records for specified periods	Applicable
135.441	Transfer Of Maintenance Records.	Requires transfer of records due to sale of aircraft	Applicable
135.443	Airworthiness Release Or Aircraft Maintenance Log Entry.	Requirement to prepare an airworthiness release or appropriate entry in the aircraft maintenance log	Applicable

Section	Title	Summary of Part	Notes/RLV Questions
App A to Part 135	Additional Airworthiness Standards For 10 Or More Passenger Airplanes	Refers to Appendix A. Additional standards include: Performance, Trim, Stalls, Control Systems, Instruments, Operating Limitations, Airplane Flight Manual. Airframe Requirements: flight loads, ground loads, Fatigue Evaluation, Design and Construction, Landing Gear, Personnel and Cargo Accommodations, Miscellaneous. Propulsion: General, Fuel System Components, Cooling, Induction System, Exhaust System, Power plant Controls and Accessories, Power plant Fire Protection, Equipment. Systems and Equipment: General, Electrical Systems and Equipment	Applicable with developed RLV standards employed
App B to Part 135	Airplane Flight Recorder Specifications	Airplane Flight Recorder Specs These appendices provide tables of specific flight recorder requirements. These may be applicable, however further definition for RLVs is required and may include telemetry.	May be applicable, need to look into telemetry issue as well. Some concepts may want to opt for Flight Recorder vice telemetry.
App C to Part 135	Helicopter Flight Recorder Specifications	Helicopter Flight Recorder Specs	May be applicable, need to look into telemetry issue as well. Some concepts may want to opt for Flight Recorder vice telemetry.
App D to Part 135	Airplane Flight Recorder Specification	Airplane Flight Recorder Specs	May be applicable, need to look into telemetry issue as well. Some concepts may want to opt for Flight Recorder vice telemetry. Do not need to duplicate different specification sections.
App E to Part 135	Helicopter Flight Recorder Specifications	Helicopter Flight Recorder Specs	May be applicable, need to look into telemetry issue as well. Some concepts may want to opt for Flight Recorder vice telemetry.
App F to Part 135	Airplane Flight Recorder Specifications	Airplane Flight Recorder Specs	May be applicable, need to look into telemetry issue as well. Some concepts may want to opt for Flight Recorder vice telemetry.

14 CFR 139 Certification And Operations: Land Airports Servicing Certain Carriers

Effective Date	05/23/02
Contents and review purpose	This FAR part contains requirements for land airports. This FAR was reviewed for applicability in the RLV domain.

Subpart A -- General

Section	Title	Summary of Part	Notes/RLV Questions
			How does this differ from Part 420 License to Operate a Launch Site?
139.1	Applicability.	This applies to primary land airports used for scheduled or unscheduled passenger operation	Applicable with modifications for RLVs. This is dependent on the RLV concept type and CONOPS. What phasing will be applied first to the NPRM language for RLVs and their spaceports? Ultimately these may be airports. How does this play into the CONOPS for RLVs in the NAS?
139.3	Definitions.	Terms defined: AFFF, Air carrier, air carrier aircraft, air carrier operation, airport, airport operating certificate, average daily departures, certificate holder, heliport, index, limited airport operating certificate, movement area, regional airports division manager, safety area, wildlife hazard	Similar RLV specific terms must be defined.
139.5	Standards And Procedures For Compliance With The Certification And Operations Requirements Of This Part.	Certain requirements in Subparts C & D must be complied with in a manner acceptable to the Administrator. FAA Circulars contain standards and procedures acceptable. Some Circulars are referenced.	Applicable.
Subpart B -- Certification			
139.101	Certification Requirements: General.	Must have an airport-operating certificate to operate a land airport in the US, DC, and territories for 30 passengers or more.	How are spaceports being handled now? What guidelines will be put in place for a transition to RLVs to spaceports and airports?
139.103	Application For	Any application for an airport operating cert	See questions above.

Section	Title	Summary of Part	Notes/RLV Questions
	Certificate.	must go to the Regional Airports Division Manager with 2 copes of an airport cert manual or specs.	
139.105	Inspection Authority.	Each applicant for an airport operating cert must allow the FAA to make inspections, including unannounced.	Applicable
139.107	Issuance Of Certificate.	Certificate awarded if inspection by Administrator is satisfactory for safe airport operations. Other requirements listed as well	See comments for 139.101 . See also Part 420.17
139.109	Duration Of Certificate.	Cert is in affect until turned in or revoked or suspended	RLVs spaceports will probably have similar language.
139.111	Exemptions.	Exemptions may be applied for especially for small volume airports for firefighter, etc costs	May not apply to RLVs and spaceports
139.113	Deviations.		
Subpart C -- Airport Certification Manual and Airport Certification Specifications			
139.201	Airport Operating Certificate: Airport Certification Manual.	Applicant must submit with application an airport operating manual.. The manual must comply with part 139.203 & 139.205 .	IS there a comparable manual for the launch site/spaceport for RLVs? Part 420 doesn't indicate a manual.
139.203	Preparation Of Airport Certification Manual.	Must be typed and signed by airport operator, in form easy to revise, have date of initial approval or latest revision, follow Circular 139 series standards and format	May be applicable.
139.205	Contents Of Airport Certification Manual.	Must contain operating procedures, facilities and equipment descriptions, responsibility assignments and any other info needed. The list of elements to be included include: lines of responsibility, runway and taxiway system, safety areas, snow & ice plan, self inspection program, etc	Many of these items are covered in the Part 420 Launch Site License information requirements. Will the Spaceport/Launch Site process require a manual similar to the airport manual? What affect will this have on RLV operations?
139.207	Maintenance Of Airport Certification Manual.	An airport operating cert holder will keep airport cert manual current, and available for inspection.	May be applicable. Not called out in Part 420.
139.209	Limited Airport Operating	An applicant may request a limited airport-	Not applicable for RLV. Unless a spaceport/launch site

Section	Title	Summary of Part	Notes/RLV Questions
	Certificate: Airport Certification Specifications.	operating cert. Only those items applicable will be in the specs. Shall comply with Part 139.211 and 139.213	targets only certain RLV concepts. Will spaceports/launch sites be concept specific or more generic to launch all types of RLVs?
139.211	Preparation Of Airport Certification Specifications.	Each airport cert spec shall be typed and signed by operator, easy to revise, have date of initial or latest revision approval, follow Circular 139.	May apply to RLVs.
139.213	Contents Of Airport Certification Specifications.	Airport Cert Specs will include: Inspection Authority, Personnel, Paved areas, unpaved areas, safety areas, among others	May apply to RLVs.
139.215	Maintenance Of Airport Certification Specifications.	Each holder of a limited airport operating cert shall keep specs current at all times, maintain a copy, furnish to airport personnel responsible for its implementation, make available to FAA.	May apply to RLVs.
139.217	Amendment Of Airport Certification Manual Or Airport Certification Specifications.	The Regional Airports Division Manager may amend any airport cert manual or any airport cert specs.	May apply to RLVs.
Subpart D -- Operations			
139.301	Inspection Authority.	Each cert holder shall allow the Admin to make inspections, including unannounced or tests for compliance.	Applies to RLVs
139.303	Personnel.	Must have sufficient qualified personnel to comply.	Applies to RLVs
139.305	Paved Areas.	Each cert holder for airport shall maintain paved areas and promptly repair. No more than 3 inch difference. No hole deeper than 3 inches. Pavement free of cracks and surface variations that could impair directional control.	Applicable for horizontal take off and/or landing RLV concepts. Due to higher vehicle loads, will conventional runways and taxiways be sufficient?
139.307	Unpaved Areas.	Each cert holder shall maintain and promptly repair the surface of each gravel, turf, or other unpaved runway, taxiway or loading ramp and parking area. No slope	May not be applicable to RLVs in the same sense as aircraft since there is a higher vehicle loading for horizontal takeoff and landing. Additionally, vertical landing will encounter debris hazard if landed on

Section	Title	Summary of Part	Notes/RLV Questions
		steeper than 2:1. Must ensure drainage to prevent ponding. Remove foreign debris and objects.	unpaved areas.
139.309	Safety Areas.	Each cert holder to the extent practical shall provide and maintain for each runway and taxiway a safety area of at least the dimensions acceptable to the Administrator. Each safety area shall be maintained clear, drained, and capable of snow removal; follow Circulars in the 150 series.	May be applicable.
139.311	Marking And Lighting.	Runway markings meet the specs for the approach with the lowest minimums authorized for each runway, taxiway centerline and edge markings, signs for taxi routes, holding position markers, ILS critical area markings and signs, runway lighting during dark hours, approach lighting, follow Circulars in the 150 series.	May be applicable. Will conventional runways be used? If not will these requirements be applicable to special runways and taxiways for RLVs?
139.313	Snow And Ice Control.	Each cert holder where there is snow and ice conditions regularly occur shall prepare maintain and carry out a snow and ice control plan. Prompt removal of snow and ice and slush. Position snow off a movement area, timely operations, notify air carriers, follow series 150 Circulars	Eventually this may be a concern for RLVs, however to take advantage of earth's rotation for orbit insertion, lower latitudes will be used with no snow, ice conditions typically.
139.315	Aircraft Rescue And Firefighting: Index Determination.	Specifies 5 Index categories of aircraft size to determine aircraft rescue and firefighting. Whichever Index has 5 or more daily departures of that size aircraft will be the Index Group for the airport. If no Index has 5 or more in it, then the next lower index with the highest number daily departures.	Will the rescue and firefighting requirements carry over from the Cape, Wallops, and Kennedy Space Center launch facilities? These Indexes only seem applicable for large number of departures.
139.317	Aircraft Rescue And Firefighting: Equipment And Agents.	Lists the number of vehicles and the fire extinguishing agents for each Index. For instance Index E requires 3 vehicles	Will the rescue and firefighting requirements carry over from the Cape, Wallops, and Kennedy Space Center launch facilities? These Indexes only seem applicable

Section	Title	Summary of Part	Notes/RLV Questions
		carrying either 500 pounds of sodium based dry chemicals or 450 pounds of potassium based dry chemicals with commensurate quantity of AFFF to total 100 gallons. It lists foam discharge capacity of 500 gallons, Halon 1211 discharged through hand line at 5 pounds per sec or turret at 16 pounds per sec.	for large number of departures.
139.319	Aircraft Rescue And Firefighting: Operational Requirements.	Lists several ops requirements for aircraft rescue and firefighting: If average daily departures or vehicle length increase then Index must increase as well, if lower Index then lower rescue and fire fighting capability, vehicle communications with 2-way voice radios, vehicle marking and lighting to contrast with background environment, vehicle readiness must be maintained, response requirements: a rescue/fire truck must reach mid part of farthest runway in 3 minutes from an alarm, all other vehicles within 4 minutes, Personnel will be provided protection clothing and equipment and emergency medical care, emergency access roads will be designated	Will the rescue and firefighting requirements carry over from the Cape, Wallops, and Kennedy Space Center launch facilities? These Indexes only seem applicable for large number of departures.
139.321	Handling And Storing Of Hazardous Substances And Materials.	Any cert holder acting as a cargo handling agent shall establish and maintain procedures for protecting persons and property on the airport during these ops,. Cert holder shall establish and maintain standards acceptable to the Administrator for protecting against fire and explosions in storing, dispensing fuel, lubricants, and oxygen. Cert holder shall inspect physical facilities	Will the storage and handling of fuels, etc requirements carry over from the Cape, Wallops, and Kennedy Space Center launch facilities?

Section	Title	Summary of Part	Notes/RLV Questions
139.323	Traffic And Wind Direction Indicators.	Cert holder shall provide a wind cone for surface wind direction info. For ops where no control tower is operating a segmented circle around one wind cone and a landing strip and traffic pattern indicator for each runway shall be provided.	May not be applicable to RLVs.
139.325	Airport Emergency Plan.	Cert holder shall develop and maintain airport emergency plan to minimize personal injury and property damage, plan must contain response to aircraft incidents and accidents, bomb, structural fires, radiological, sabotage, hijack, power failure, water rescue. It must include contact info for medical, rescue squad, ambulance, inventory vehicles and aircraft facilities agencies and people, each hanger to act as triage facility, crowd control, remove disabled aircraft, emergency alarm systems notification procedures, exercises once every 3 years.	Applicable for RLVs. What will be carried over from the Cape, Wallops, or Kennedy Space Center? Will new top down approach be taken for each new launch facility?
139.327	Self-Inspection Program.	Each cert holder will self-inspect to assure compliance with this part daily or after unusual condition, follow 150 series Circulars	Applicable for RLVs. What will be carried over from the Cape, Wallops, or Kennedy Space Center? Will new top down approach be taken for each new launch facility?
139.329	Ground Vehicles.	Cert holder shall limit access to movement areas and safety areas only to ground vehicles necessary for airport ops. Establish and implement procedures for the safe and orderly access to and ops on movement area and safety area. In absence of control tower provide adequate procedures to control ground vehicles. Familiarize personnel working on airport of procedures.	Applicable for RLVs. What will be carried over from the Cape, Wallops, or Kennedy Space Center? Will new top down approach be taken for each new launch facility?
139.331	Obstructions.	Cert holder shall ensure each object in each area within its authority, which exceeds	May be applicable to RLVs.

Section	Title	Summary of Part	Notes/RLV Questions
		height or penetrates is either removed, marked or lighted.	
139.333	Protection Of Navaids.	Protect navaids from EMF, theft, vandalism or visual and electronic disruption.	Applicable
139.335	Public Protection.	Cert holder shall make safeguards to prevent inadvertent entry to the movement area by unauthorized persons or vehicles, reasonable protection of persons and property from blast, meet 49 CFR 1542.	Applicable.
139.337	Wildlife Hazard Management.	Cert holder shall conduct an ecological study when multiple bird strikes have occurred, collisions with other wildlife o when wildlife size and numbers have access to airport flight patterns. The study will be provided to the FAA. Basic environmental issues.	Applicable.
139.339	Airport Condition Reporting.	Cert holder shall provide collection and dissemination of airport condition info to air carriers, shall use NOTAM system to include the following: construction/maintenance, surface irregularities, snow, ice, slush, water, piled/drifted snow, foreign objects, wildlife issues, non-availability of rescue and firefighters	May be applicable to spaceports.
139.341	Identifying, Marking, And Reporting Construction And Other Unserviceable Areas.	Cert holder shall mark and light if appropriate construction areas and unserviceable areas on or adjacent to movement areas or other areas aircraft operate, each item of construction equipment and roadway which may affect safe movement, adjacent to a navaid, provide procedures for avoiding damage to utilities, cables, wires, conduits, pipelines, use series 150 Circulars.	May be applicable to spaceports.

Section	Title	Summary of Part	Notes/RLV Questions
139.343	Noncomplying Conditions.	Cert holder will limit carrier ops when and where Subpart D cannot be met.	May be applicable to spaceports.

14 CFR 145 Repair Stations

Effective Date	04/25/02
Contents and review purpose	This FAR part contains rules for performance of repairing aircraft operating under part 121 and 125. Also discussed are domestic and foreign repair stations. This FAR was reviewed for applicability in the RLV domain. Note: This review was accomplished on the existing rule. The FAA has published a new rule that will take effect in mid-2003. While the new rule has the same intent as the existing rule, another review will be needed at the time RLV-specific repair station rules are formulated.

Subpart A - General

Section	Title	Summary of Part	Notes/RLV Questions
145.1	Applicability	Covers all facilities doing repair and alteration Divides facilities into both domestic and foreign Allows for "manufacturer repair facilities"	Do we need to maintain foreign and domestic categories?
145.2	Performance Of [Activities] For [Pt 121 And 125 Operators]	Activities performed for Part 121 operators will comply with that operator's manuals Inspections performed for Part 125 operators will comply with that operator's inspection program	What will be the spacecraft categories (cargo, transport, commuter, etc)?
145.3	Certificate Required	Must be licensed by FAA	OK
145.11	Application And Issue	Receive a license after submitting inspection procedures and list of repairs station intends to offer In case of propellers, must identify specific props that will be serviced	What should the appropriate submittals be?
145.13	Certification Of Foreign Repair Stations: Special Requirements	Must provide in addition to 145.11: Brochure outlining services Reasons for location Inspection Procedures Org chart with mgmt and supervisory personnel identified Information on subcontractors, and work to be subcontracted Confirmation of fee payment per Part 187	
145.15	Change Or Renewal Of	Repair station certificate may be amended for:	

Section	Title	Summary of Part	Notes/RLV Questions
	Certificates	Change of location Change of services offered New certificate must be applied for change of owner Foreign stations must apply for renewal 30 days prior to date or do 145.13 again	
145.17	Duration Of Certificates	Domestic certificates remain in effect until retired, suspended or revoked Foreign 12 months first time, every 24 thereafter Certificates must be returned to FAA when no longer valid	
145.19	Display Of Certificate	Displayed in a public area of station and reviewable by Administrator	OK
145.21	Change Of Location Or Facilities	Housing and facilities (per Part 145.35) cannot be changed without prior permission of Administrator Administrator may prescribe operations during a move	
145.23	Inspection	Stations are subject to and must allow for inspections by the Administrator Defects will be noted in writing to the station following an inspection	OK
145.25	Advertising	All advertising must contain certificate number	OK
Subpart B - Domestic Repair Stations			
145.31	Ratings	Ratings divided by major category and classes within the category. They are: Airframe - classes 1-4 (metal vs. composite, and large vs small) Power plant - classes 1-3 (size and type) Propellers - classes 1-2 (fixed pitch vs all others) Radio Equipment - classes 1-3 (communication, navigation, radar) Instrument - classes 1-4 (mechanical, electrical, gyroscopic, and electronic)	What should the ratings be - is there a model that is adaptable from the STS?

Section	Title	Summary of Part	Notes/RLV Questions
		Accessory - classes 1-3 (mechanical, electrical, and electronic)	
145.33	Limited Ratings	Administrator may limit a station to a particular aircraft, powerplant, or system. Limits may also be by type of activity (e.g. NDT), or by manufacturer (e.g., station can only work on Honeywell equipment)	
145.35	Housing And Facility Requirements	Must provide adequate space for work in progress, necessary equipment to conduct authorized functions, and segregate materials as needed to ensure work is protected from contamination, damage, etc. Includes some specifics for particular operations (e.g., painting). Includes provisions for proper lighting, ventilation, and temperature so work is not impaired	
145.37	Special Housing And Facility Requirements	Special requirements for particular ratings: Airframe - facility to house aircraft of largest type approved to work on Propulsion - segregation of parts associated with individual powerplants Propellers - proper stands Radios - Protection from moisture Instrument - Relatively dust-free environment for shops without air conditioning (???)	
145.39	Personnel Requirements	Repair station primarily responsible for the work of employees. "Uncertified" technicians evaluated by test and employment record Number of employees commensurate with level of work Supervisory requirements including, number, credentials, reviewability by the Administrator, minimum number where apprentices are being	Where are the personnel going to come from - do not have an experience base for this type of approach.

Section	Title	Summary of Part	Notes/RLV Questions
		used in a group Individuals with direct responsibility for work performed must be certificated per Part 65 with at least 18 months experience, return to service experience for individuals with direct responsibility for airframe authority Limited stations must show appropriate training commensurate with limitation	
145.41	Recommendations Of Persons For Certification As Repairmen	Where station applies for work requiring repairman, at least one specific name must be recommended with a certification that the named individual meets Part 65.101 Must certify that individual is able to perform and supervise work Be at or above level of Shop Foreman or Department Head	
145.43	Records Of Supervisory And Inspection Personnel	Roster to be maintained for all supervisors and inspectors (authority for determining airworthiness) - must contain the following: name, title, total years of experience, employment history, scope of present work, and certificates held Roster will be updated to reflect terminations, reassignments, any appreciable changes Roster to be available for review by Administrator Individuals not on the roster may not be directly in charge of alterations or maintenance	
145.45	Inspection Systems	Must have system in place; personnel must have appropriate knowledge and experience, tools must be properly maintained Technical specs relevant to repairs must be available and current Must have incoming inspection Must have appropriate knowledge in performing	

Section	Title	Summary of Part	Notes/RLV Questions
		and analyzing results from magnetic, fluorescent, and other forms of mechanical inspection Must have special provisions for inspecting aircraft or systems that have been involved in accidents for hidden damage	
145.47	Equipment And Materials: Ratings Other Than Limited Ratings	Equipment and Materials must be available Equipment must in calibration with NBS, foreign equipment may use other Administrator-approved calibration standard Work may be subcontracted to a non-certified supplier provided they are the original manufacturer and hold the TC, the part is covered by the TC, and component maintenance is done by the original manufacturer or its manufacturing licensee - before RTS, the repair station must still inspect it with their approved inspection system	
145.49	Equipment And Materials: Limited Ratings	Applicants for limited ratings must have equipment and material for their rating unless the manufacturer data indicates certain items are not necessary Additionally, special equipment and materials are required for mag and penetrant (both wet and dry) Special requirements for emergency equipment Special requirements for rotor blades as required by manufacturer Special requirements for fabric work	
145.51	Privileges Of Certificates	Maintain equipment per rating Return an article to service For airframe rating, perform required inspections and RTS Maintain or alter any article per its allowed rating at another location as long as work can	

Section	Title	Summary of Part	Notes/RLV Questions
		be done in accordance with approved procedures including authorized personnel, equipment, and it has procedures specifically addressing other location work.	
145.53	Limitations Of Certificates	A holder cannot do anything for which they are not rated or do not have the appropriate equipment, material, or personnel as outlined in their rating.	
145.55	Maintenance Of Personnel, Facilities, Equipment, And Materials	Personnel, equipment, and materials shall be provided in accordance with rating.	
145.57	Performance Standards	Operations shall be performed in accordance with Part 43 Shall maintain current service manuals, instructions, and service bulletins from manufacturers for all articles it alters or maintains For Radios, shall perform work in accordance with Part 43 and will use equipment and test methods as specified by manufacturer, or if not available, "good practices of the aircraft radio industry".	
145.59	Inspection Of Work Performed	All work to be inspected prior to RTS by a qualified, trained inspector	OK
145.61	Performance Records And Reports	Records shall be maintained that list who did the work, who the supervisor was, and who inspected the work for at least two years from completion of the work.	
145.63	Reports Of Defects Or Unairworthy Conditions	Serious defect reporting within 72 hours When in doubt report If already reported under another area of the rule, no need to report again	
Subpart C - Foreign Repair Stations			
145.71	General Requirements	Certificate will be issued if Administrator deems the station's services may be needed to	

Section	Title	Summary of Part	Notes/RLV Questions
		maintain US-registered aircraft	
145.73	Scope Of Work Authorized	All work is authorized commensurate with station rating	
145.75	Personnel	Must have enough trained personnel to do the work Supervisors and inspectors must understand the FARs along with ADs and the manufacturers' specs Supervisors and inspectors need not be certificated, but where they are not, there qualifications are determined by Administrator by oral or practical test or other means All supervisors and inspectors must understand, read, and write English	
145.77	General Operating Rules	Foreign stations must comply with Subpart B of this rule except 145.61 and 145.63 They have all privileges of domestic stations provided in 145.51	
145.79	Records And Reports	Records or maintenance shall be maintained for all US registered aircraft including make, model, IS number, serial numbers and a description of the work Major modifications and alterations shall be reported directly to the Administrator as well as the owner - except for scheduled flag carriers where a log entry is sufficient all records shall be available for review by the Administrator Safety-related problems shall be reported within 72 hours If already reported under another Part, duplicate reporting is not required	
Subpart D - Limited Ratings for Manufacturers			
145.101	Application And Use	Repair Station certificates with limited manufacturer rating may be issued:	

Section	Title	Summary of Part	Notes/RLV Questions
		TC holder or licensee with approved production system PC Holder TSO Holder Person meeting 21.303 and having an approved Fabrication Inspection System	
145.103	Privilege Of Certificates	Maintain and approve RTS for any article within its rating at any location unless expressly limited	
145.105	Performance Standards	Except as noted in Part 145.2, work shall be done in accordance with Part 43	
App A to Part 145		This 9 1/2-page appendix describes specific technical functions for the various ratings. It's unclear what its relationship is to the other parts, how you reference it or enforce it, etc. There are some very old provisions in the appendix regarding repair of wood elements, fabric repairs, etc.	Need to understand how this is used in administering this rule.

14 CFR 147 Aviation Maintenance Technician Schools

Effective Date	06/10/02
Contents and review purpose	This FAR part contains certification requirements and operating rules for maintenance technician schools. This FAR was reviewed for applicability in the RLV domain.

Subpart A - General

Section	Title	Summary of Part	Notes/RLV Questions
147.1	Applicability	Requirements for issuing aviation maintenance technician school certificates and associated ratings and general operating rules for the holders.	These requirements apply to RLV once we can figure out what set of skills is needed for an "RLV Maintenance technician". Currently, RLV technologies are so varied that there does not seem to be a single set that is applicable to all RLVs. Once the market place chooses the most optimum design, there may be a place for general qualifications for a maintenance technician and at that time a general curriculum as well as specific specialization of structures and powerplant can be designed.
147.3	Certificate Required	Aviation maintenance technician school should be in compliance and be certified per this part	
147.5	Application And Issue	Application requirements and information needed.	
147.7	Duration Of Certificates	Certificate can be surrendered, suspended or revoked.	
Subpart B - Certification Requirements			
147.11	Ratings	Airframe, powerplant or airframe and powerplant.	
147.13	Facilities, Equipment, And Material Requirements	Per 147.15 through 147.19	
147.15	Space Requirements	Heating, lighting and ventilation. Suitable areas and equipment for teaching theory as well as teaching all of the requisite maintenance hands-on.	
147.17	Instructional	Suitable for practical projects required by the	

Section	Title	Summary of Part	Notes/RLV Questions
	Equipment Requirements	curriculum. No more than 8 students will work on a unit. Must have an aircraft. If the aircraft does not have specific equipment such as retractable gear- the school should provide an alternative such as a mockup.	
147.19	Materials, Special Tools, And Shop Equipment Requirements	Adequate supply.	
147.21	General Curriculum Requirements	Must have approved curriculum - requirements for approval of the curriculum.	
147.23	Instructor Requirements	Instructors should hold the mechanic certificate and proper ratings. One instructor for 25 students. Other approved specialized instructors may teach subjects such as math, physics etc.	
Subpart C - Operating Rules			
147.31	Attendance And Enrollment, Tests, And Credit For Prior Instruction Or Experience	Number of hours of instruction in a day, number of days in a week and number of hours in a 7-day period. Instructions on what each student must learn, and what credits can be given to previous education or experience.	
147.33	Records	Record keeping for schools	
147.35	Transcripts And Graduation Certificates	Students will get an authenticated certificate and a transcript showing the curriculum that the student has passed.	
147.36	Maintenance Of Instructor Requirement	School shall maintain rating even after the certification.	
147.37	Maintenance Of Facilities, Equipment, And Material	School shall maintain rating even after the certification.	
147.38	Maintenance Of Curriculum Requirements	School shall maintain rating even after the certification.	
147.38a	Quality Of Instruction	Quality of instruction shall ensure a high	

Section	Title	Summary of Part	Notes/RLV Questions
		retention of knowledge - quantitative measure is given.	
147.39	Display Of Certificate	School shall display its certificate in a non-obscure location.	
147.41	Change Of Location	Rules for changing its location.	
147.43	Inspection	Schools are open to inspection by the FAA.	
147.45	Advertising	Distinguish between approved courses and others.	
App A to Part 147	Curriculum Requirements	Gives terms used in Appendices B, C and D	
App B to Part 147	General Curriculum Subjects	Lists the subjects and the level of proficiency in the general curriculum required in at least 400 hours.	
App C to Part 147	Airframe Curriculum Subjects	Lists the subjects and the level of proficiency in the Airframe curriculum required in at least 750 hours in addition to the 400 hours of general curriculum.	
App D to Part 147	Powerplant Curriculum Subjects	Lists the subjects and the level of proficiency in the powerplant curriculum required in at least 750 hours in addition to the 400 hours of general curriculum.	

14 CFR 183 Representatives of the Administrator

Effective Date	06/18/02
Contents and review purpose	This FAR part contains requirements for designation of responsibility to examine, inspect, and test on behalf of the Administrator. This FAR was reviewed for applicability in the RLV domain.

Subpart A -- General

Section	Title	Summary of Part	Notes/RLV Questions
183.1	Scope	Part applies to private persons designated by Administrator to examine, inspect, and test persons of aircraft to allow issuance of airman and aircraft certificates	Terminology issues - airman, aircraft (2)
Subpart B - Certification Of Representatives			
183.11	Selection	Part specifies who within the FAA can select a designee and through what mechanism	Will need to add one or more sections to reflect authority responsible for selecting space-related designees
183.13	Certification	Certificates of designation reflecting areas of authority and expiration date of designation are provided to designees	Will need to add one or more sections for space-related designees
183.15	Duration of Certificates	Generally one year unless renewed; reasons for termination include: request of designee, request of designee's employer, termination of employee from employer who requested designation, improper performance, FAA no longer needing assistance, for any other reason deemed appropriate by administrator	Need to consider appropriate durations and add one or more sections for space-related designees
183.17	Reports	Designees shall make reports to the FAA as required by the administrator	
Subpart C - Kinds Of Designations: Privileges			
183.21	Aviation Medical Examiners	Accepts applications for exams per Pt 67; performs exams; issues or denies medical certificates (per Pt 67); issues student pilot certificates per Pt 61.85; participates in accident investigations if requested	
183.23	Pilot Examiners	Accepts applications for flight tests; conducts such tests; and issues temporary pilot certificates and	

Section	Title	Summary of Part	Notes/RLV Questions
		ratings to qualified candidates	
183.25	Technical Personnel Examiners	Specifies the designated activities for the following designees: designated mechanic examiners (DME) designated parachute rigger examiner (DPRE) air traffic control tower operator examiner designated flight engineer examiner (DFEE) designated flight navigator examiner (DFNE) designated aircraft dispatcher examiner (DADE)	
183.27	Designated Aircraft Maintenance Inspectors	DAMIs may approve maintenance on civil aircraft used by US military flying clubs overseas	
183.29	Designated Engineering Representatives	Specifies at a high-level the type of information each of the following DER's may approve: Structural DER Power Plant DER (installation) Systems and Equipment DER Radio DER Engine DER (engine design) Propeller DER Flight Analyst DER Flight Test Pilot DER Acoustical DER	
183.31	Designated Manufacturing Inspection Representatives	DMIR's may issue airworthiness certificates, export certificates, experimental certificates, and special flight permits to export aircraft; DMIR’s may conduct inspections of prototype and production parts on behalf of the FAA	
183.33	Designated Airworthiness Representative	DAR's may perform examinations, inspections, and testing for the purposes of issuing certificates - for maintenance under the auspices of flight standards, and for production/design under auspices of aircraft certification	

14 CFR 381 Special Event Tours

Effective Date	05/23/02
Contents and review purpose	This FAR part contains requirements for tour operators. This FAR was reviewed for applicability in the RLV domain.

Section	Title	Summary of Part	Notes/RLV Questions
381.1	Purpose.	Ensure air travelers receive promised admission to event. Expands "Super Bowl rule".	Eventually may apply to RLVs. Is space tourism a "Super Bowl" event or is space tourism simply the ride to space and there may be a special event on orbit?
381.3	Applicability.	Applies to Special Event Tours that are interstate or foreign air transport originating in the US	Eventually may apply to RLVs with modifications for "to space" transportation.
381.5	Definition.	Special Event Tour means tour that is organized for the purpose of attending a sporting, social, religious, educational, cultural, political, or other event of a social nature and limited duration which exists apart from the tour itself and which is represented as admission to the event.	Eventually may apply to RLVs. Is space tourism simply the ride to space and there may be a special event on orbit?
381.7	Advertising.	Special Event Tours can only be conducted if the operator is ion physical possession of enough tickets to the event to provide seats to the tour, the operator has entered into written contract with an organization that is a distributor, the operator has entered a written contract with another person or org that has a written contract with the distributor.	Eventually may apply to RLVs.
381.9	Sales.	No money can change hands unless the operator of the tour or an authorized agent unless the operator has physical possession of or written contracts. Upon receiving the money the operator must reserve one ticket for that individual.	Eventually may apply to RLVs.
381.11	Refunds.	Money must be refunded if the tour doesn't take place.	Eventually may apply to RLVs.
381.13	Price Increases.	Participant may cancel if the price increase is more than 10% of the original price. Can't raise tour price less than ten days before departure.	Eventually may apply to RLVs.

14 CFR 383 Civil Penalties

Effective Date	05/23/02
Contents and review purpose	This FAR part contains basis and amounts for civil penalties. This FAR was reviewed for applicability in the RLV domain.

Section	Title	Summary of Part	Notes/RLV Questions
383.1	Basis And Purpose	Establishes the Basis for the Civil Penalties mentioned in this Far and the Purpose of such penalties. Civil Penalties are applicable with respect to violations of 49 U.S.C. 40127, 41705, and 41712 and other s provided in 49 U.S.C. 46301 (a) (1).	This FAR stipulates penalties but these need to be applied to RLVs and given appropriate amounts. Refer to 431.71 TITLE: Public safety responsibility. Would matters involving litigation mirror those that apply to civil aviation or air carrier operations?
383.2	Amount Of Penalty	Maximum of $10,000 for each violation of 49 U.S.C. 41705 and max of $2,500 for each violation of 49 U.S.C. 40127 or 41712. Further violations within the scope of 49 U.S.C. 46301 the penalty is $1,100.	Applicable for RLVs with modifications perhaps. What are the requirements for particular dollar amounts of civil penalties?

14 CFR 400 Basis and Scope

Effective Date	05/09/02
Contents and review purpose	This FAR part contains the basis and scope for the commercial space transport regulations. This FAR was reviewed for avoiding any conflicts in the new proposals for rules.

Subpart A - General

Section	Title	Summary	Notes/RLV Questions
400.1	Basis	Commercial Space Launch Act - 1984 Applicable treaties and international Agreements	
400.2	Scope	Commercial Space Transportation Activities conducted in US or by a US citizen; does not apply to amateur rockets or government space activities	How does this effect launches outside US, but is US firm, presumably owned and operated by US citizens?

14 CFR 401 Organization and Definitions

Effective Date	05/09/02
Contents and review purpose	This FAR part contains organization and definitions for Commercial Space Transportation. This FAR was reviewed for avoiding any conflicts in the new proposals for rules.

Section	Title or Term	Summary or Definition	Notes/RLV Questions
401.1	Office of Commercial Space Transportation	Unit within DOT, location given is DOT HQ	
401.3	Director of Commercial Space Transportation	Appointed by Sec. Of Transportation to "license and otherwise regulate commercial space launch activities"; "encourage, facilitate, and promote commercial space launches" by US private sector	"safety" presumably" falls under facilitation?
The following section is a corollary to 14 CFR 1			
401.5	Definitions		
	Act	49 U.S.C. Subtitle IX, Commercial Space Transportation, ch. 701 -- Commercial Space Launch Activities, 49 U.S.C. 70101-70121	
	Amateur Rocket Activities	Launch activities conducted at private sites involving rockets powered by a motor or motors having a total impulse of 200,000 pound-seconds or less and a total burning or operating time of less than 15 seconds, and a rocket having a ballistic coefficient-*i.e.,* gross weight in pounds divided by frontal area of rocket vehicle-less than 12 pounds per square inch	
	Associate Administrator	Associate Administrator for Commercial Space Transportation, Federal Aviation Administration, or any person designated by the Associate Administrator to exercise the authority or discharge the responsibilities of the Associate Administrator	
	Contingency Abort	Cessation of vehicle flight during ascent or	

Section	Title or Term	Summary or Definition	Notes/RLV Questions
		descent in a manner that does not jeopardize public health and safety and the safety of property, in accordance with mission rules and procedures. Contingency abort includes landing at an alternative location that has been designated as a contingency abort location in advance of vehicle flight	
	Emergency Abort	Cessation of vehicle flight during ascent or descent in a manner that minimizes risk to public health and safety and the safety of property. Emergency abort involves failure of a vehicle, safety-critical system, or flight safety system such that contingency abort is not possible	
	Federal Launch Range	Launch site, from which launches routinely take place, that is owned and operated by the government of the United States	
	Flight Safety System	System designed to limit or restrict the hazards to public health and safety and the safety of property presented by a launch vehicle or reentry vehicle while in flight by initiating and accomplishing a controlled ending to vehicle flight. A flight safety system may be destructive resulting in intentional break up of a vehicle or nondestructive, such as engine thrust termination enabling vehicle landing or safe abort capability	
	Hazardous Materials	Hazardous materials as defined in 49 CFR 172.101	
	Launch	To place or try to place a launch vehicle or reentry vehicle and any payload from Earth in a suborbital trajectory, in Earth orbit in outer space, or otherwise in outer space, and includes activities involved in the preparation of a launch vehicle for flight, when those activities take	This definition is problematic in that it takes RLV operations completely out of the realm of standard aviation, I.e., if an RLV flies to a certain altitude and then initiate actions to take it higher to a sub-orbital or orbital trajectory, the initial atmospheric flight is still considered part of the launch. This

Section	Title or Term	Summary or Definition	Notes/RLV Questions
		place at a launch site in the United States. The term launch includes the flight of a launch vehicle and pre-flight ground operations beginning with the arrival of a launch vehicle or payload at a U.S. launch site. For purposes of an ELV launch, flight ends after the licensee's last exercise of control over its launch vehicle. For purposes of an orbital RLV launch, flight ends after deployment of a payload for an RLV having payload deployment as a mission objective. For other orbital RLVs, flight ends upon completion of the first sustained, steady-state orbit of an RLV at its intended location	has implications for fitting many RLV's concepts into the standard NAS definition and procedures.
	Launch Accident	(1) A fatality or serious injury (as defined in 49 CFR 830.2) to any person who is not associated with the flight; (2) Any damage estimated to exceed $25,000 to property not associated with the flight that is not located at the launch site or designated recovery area. (3) An unplanned event occurring during the flight of a launch vehicle resulting in the known impact of a launch vehicle, its payload or any component thereof: (i) For an expendable launch vehicle (ELV), outside designated impact limit lines; and (ii) For an RLV, outside a designated landing site.	Defined in terms similar to those used in 882. These definitions are very different than the aviation community where the issue is safety of occupants.
	Launch Incident	An unplanned event occurring during the flight of a launch vehicle, other than a launch accident, involving a malfunction of a flight safety system or safety-critical system or failure of the licensee's safety organization, design or operations	
	Launch Operator	A person who conducts or who will conduct the launch of a launch vehicle and any payload	Need to understand how this person relates to pilot of an RLV.
	Launch Site	The location on Earth from which a launch takes	If you have an RLV capable of using any airport

Section	Title or Term	Summary or Definition	Notes/RLV Questions
		place (as defined in a license the Secretary issues or transfers under this chapter) and necessary facilities at that location	as a launch site, what are the effects, if any, on the airport FARs?
	Launch Vehicle	A vehicle built to operate in, or place a payload in, outer space or a suborbital rocket.	
	Mishap	A launch or reentry accident, launch or reentry incident, launch site accident, failure to complete a launch or reentry as planned, or an unplanned event or series of events resulting in a fatality or serious injury (as defined in 49 CFR 830.2), or resulting in greater than $25,000 worth of damage to a payload, a launch or reentry vehicle, a launch or reentry support facility or government property located on the launch or reentry site	
	Operation Of A Launch Site	The conduct of approved safety operations at a permanent site to support the launching of vehicles and payloads	
	Operation Of A Reentry Site	The conduct of safety operations at a permanent site on Earth at which a reentry vehicle and its payload, if any, is intended to land	
	Payload	An object that a person undertakes to place in outer space by means of a launch vehicle, including components of the vehicle specifically designed or adapted for that object.	
	Person	An individual or an entity organized or existing under the laws of a state or country	
	Reenter, Reentry	to return or attempt to return, purposefully, a reentry vehicle and its payload, if any, from Earth orbit or from outer space to Earth. The term "reenter; reentry" includes activities conducted in Earth orbit or outer space to determine reentry readiness and that are critical to ensuring public health and safety and the	

Section	Title or Term	Summary or Definition	Notes/RLV Questions
		safety of property during reentry flight. The term "reenter; reentry" also includes activities conducted on the ground after vehicle landing on Earth to ensure the reentry vehicle does not pose a threat to public health and safety or the safety of property	
	Reentry Accident	Any unplanned event occurring during the reentry of a reentry vehicle resulting in the known impact of the reentry vehicle, its payload, or any component thereof outside a designated reentry site; a fatality or serious injury (as defined in 49 CFR 830.2) to any person who is not associated with the reentry; or any damage estimated to exceed $25,000 to property not associated with the reentry and not located within a designated reentry site	Accidents and incidents are not characterized by specific terms for conventional aviation. Why do we need this term?
	Reentry Incident	Any unplanned event occurring during the reentry of a reentry vehicle, other than a reentry accident, involving a malfunction of a reentry safety-critical system or failure of the licensee's safety organization, procedures, or operations	Same ? As reentry accident
	Reentry Operator	A person responsible for conducting the reentry of a reentry vehicle as specified in a license issued by the FAA	
	Reentry Site	The location on Earth where a reentry vehicle is intended to return. It includes the area within three standard deviations of the intended landing point (the predicted three-sigma footprint).	
	Reentry Vehicle	A vehicle designed to return from Earth orbit or outer space to Earth substantially intact. A reusable launch vehicle that is designed to return from Earth orbit or outer space to Earth substantially intact is a reentry vehicle	Synonymous with RLV
	Reusable Launch	Means a launch vehicle that is designed to	

Section	Title or Term	Summary or Definition	Notes/RLV Questions
	Vehicle	return to Earth substantially intact and therefore may be launched more than one time or that contains vehicle stages that may be recovered by a launch operator for future use in the operation of a substantially similar launch vehicle	
	Safety-Critical	Essential to safe performance or operation. A safety-critical system, subsystem, condition, event, operation, process or item is one whose proper recognition, control, performance or tolerance is essential to system operation such that it does not jeopardize public safety	
	Vehicle Safety Operations Personnel	Those persons whose job performance is critical to public health and safety or the safety of property during RLV or reentry operations	By this definition, the pilot of an RLV, mission controllers, and ATC would be included
	State And United States	When used in a geographical sense, the several States, the District of Columbia, the Commonwealth of Puerto Rico, American Samoa, the United States Virgin Islands, Guam, and any other commonwealth, territory, or possession of the United States	
	United States Citizen	(1) Any individual who is a citizen of the United States; (2) Any corporation, partnership, joint venture, association, or other entity organized or existing under the laws of the United States or any State; and (3) Any corporation, partnership, joint venture, association, or other entity which is organized or exists under the laws of a foreign nation, if the controlling interest in such entity is held by an individual or entity described in paragraph (1) or (2) of this definition. *Controlling interest* means ownership of an amount of equity in such entity sufficient to direct management of the entity or to void transactions entered into by management.	Compound definition - not just an individual, but also a company organized and existing under the laws of the US, AND any corporation whose controlling interest (also defined) is a US citizen or is organized under US law

Section	Title or Term	Summary or Definition	Notes/RLV Questions
		Ownership of at least fifty-one percent of the equity in an entity by persons described in paragraph (1) or (2) of this definition creates a rebuttable presumption that such interest is controlling	

14 CFR 404 Regulation and Licensing Requirements

Effective Date	05/09/02
Contents and review purpose	This FAR part contains regulation and licensing requirements for commercial transportation This FAR was reviewed for avoiding any conflicts in the new proposals for rules.

Subpart A - General

Section	Title	Summary of Part	Notes/RLV Questions
404.1	Scope	Rulemaking authority (including ability to eliminate or waive rules) comes from USC, Subtitle IX, chapter 701	
404.3	Filing Of Petitions To The Associate Administrator	States any person may request issuance, amendment, or repeal of a regulation associated with commercial space launch activities - provides description of process to submit such a request	Interesting to note that unlike the aviation rulemaking FAR, the requestor for such an action does not have to make the case of why their request serves the public interest - also no mention of safety
404.5	Actions On Petitions	Provides actions by the FAA in four categories: general, grants, denials, and notification	Language is again "Director", rather than "Associate Administrator"
Subpart B - Rulemaking			
404.11	General	Defines actions of Director to determine when NPRM activity is required, versus imposition of an immediate rule; allows Director to invite interested parties to participate in rulemaking activities	
404.13	Petitions For Extension Of Time To Comment	May petition, petition extension must be in public interest	
404.15	Consideration Of Comments Received	All comments considered, late comments only as time and resources allow	
404.17	Additional Rulemaking Proceedings	Director has discretion to hold public meetings, solicit further comment, etc	

Section	Title	Summary of Part	Notes/RLV Questions
404.19	Hearings	Section 556 and 557 of Title 5 USC do not apply to this Part; all hearings are non-adversarial with no adverse parties; Director designates someone to conduct meeting and FAA legal designates a legal officer for hearing; rules are not based exclusively on hearings but rather the entire rulemaking effort	

14 CFR 405 Investigations and Enforcement

Effective Date	05/09/02
Contents and review purpose	This FAR part contains investigations and enforcement for commercial space transportation. This FAR was reviewed for avoiding any conflicts in the new proposals for rules.

Section	Title	Summary of Part	Notes/RLV Questions
405.1	Monitoring Of Licensed And Other Activities	Full right of entry for launch sites, reentry sites, manufacturing, production, testing, and assembly sites - not only prime, but all contractors or licensee sites	Parallel to aviation right of entry rules
405.3	Authority To Modify, Suspend, Or Revoke	Full authority to modify, suspend or revoke issued licenses; modifications may be at licensee request; suspension or revocation may be for non-compliance, safety, or national security reasons; actions apply even while review of action is undertaken	
405.5	Emergency Orders	May immediately terminate, suspend, or prohibit launch, reentry, or operation of associated sites for reasons of public safety, safety of property, national security or foreign policy interest of the US	

14 CFR 406 Administrative Review

Effective Date	06/21/02
Contents and review purpose	This FAR part contains administrative review for commercial space transportation. This FAR was reviewed for avoiding any conflicts in the new proposals for rules.

Subpart A - Investigations and Enforcement

Section	Title	Summary of Part	Notes/RLV Questions
406.1	Hearings In License And Payload Actions	Defines who is entitled to a hearing, namely anyone affected by a decision concerning a license; hearing will be conducted by an Administrative law judge	
406.3	Submissions; Oral Presentation In License And Payload Actions	Submissions will be written unless Administrative law judge determines need for oral presentation; petitions must be within 30 days after decision or finding	
406.5	Administrative Law Judge's Recommended Decision In License And Payload Actions	Associate Administrator has final decision after receiving recommended decision from judge	
406.7	Reserved		
406.9	Civil Penalties	Describes the civil penalty process including maximum penalty ($100K), the process of notification, responses, and issuance of final orders; includes provisions for compromise	
406.10	RESERVED (Through 406.100)		
Subpart B - Rules of Practice in FAA Space Transportation Adjudications			
406.101	Applicability	Currently only the civil penalty process outlined in 406.9	
406.103	Definitions That Apply To Part 406	Various definitions used throughout this part including Administrative Law Judge, FAA Decision maker, and Respondent	

Section	Title	Summary of Part	Notes/RLV Questions
406.105	Separations Of Functions For Prosecuting Civil Penalties And Advising The FAA Decision Maker	Provides a separation between most FAA legal staff and the Office of Chief Counsel so that the Office of Chief Counsel may properly advise the Associate Administrator regarding acceptance of a judges' recommended decision	
406.107	Appearances Of Parties, And Attorneys And Representatives	Anyone may appear and anyone may be represented by an attorney	
406.109	Administrative Law Judges -- Powers And Limitations	May hold hearings, collect evidence, issue subpoenas, and make findings; may not issue orders of contempt or impose sanctions outside this FAR Subpart	
406.111	Signing Documents	All documents must be signed prior to submission to the judge as meeting a set of specified criteria including that the submission is relevant; If the criteria are deemed by the judge to have been violated, he/she may take action to deny motion, submission of argument, etc.	
406.113	Filing Of Documents With The Docket Management System (DMS) And Sending Documents To The Administrative Law Judge And The Assistant Chief Counsel For Litigation	Provides specific process steps for filing of documents with DMS and to the FAA legal Counsel	
406.115	Serving Documents On Other Parties	All parties must be served with documents being filed with DMS - states specific process for accomplishing this	
406.117	Confidential Information	Provides specific instructions for protection of confidential information	
406.119	Computation Of Time	How time is counted for the various provisions of this FAR part	
406.121	Extension Of Time	How and when extensions for filings under this FAR part may be requested/granted	

Section	Title	Summary of Part	Notes/RLV Questions
406.123	Waivers	Must be in writing or by stipulation at a hearing; all terms must be recorded	
406.127	Complaint And Answer In Civil Penalty Adjudications	Provides detailed process for filings of complaint and attendant responses via hearings, mail, and/or DMS	
406.133	Amendment Of Pleadings	Provides response and deadlines for amendments to pleadings	
406.135	Withdrawal Of Complaint Of Request For Hearing	Complaints or hearing requests may be withdrawn at any time without judge approval - forces dismissal of proceedings with prejudice	
406.137	Intervention	Provides rules for a third-party intervener	
406.139	Joint Procedural Or Discovery Schedule	Sets down the rules for filings to an Agreed upon schedule	
406.141	Motions	Sets down the rules for filing a variety of motions including timing and contents	
406.143	Discovery	Sets down the rules for accomplishing discovery including a discussion of methods and limitations	
406.147	Notice Of Hearing	Sets down the details of how hearings will be specified; includes a linkage to hearings that may need to address both space and aviation-related concerns under Part 13	Interesting that up to this point, this is the only linkage explicitly allowed for that relates commercial space enforcement with aviation enforcement - what was unique that drove this?
406.149	Evidence	Sets forth the definitions of different types of evidence allowed - includes the admissibility of hearsay	
406.151	Standard Of Proof	Reliable, probative, and substantial evidence	
406.153	Burden Of Proof	Generally, the party bringing the charge has the burden of proof	
406.155	Offer Of Proof	Evidence excluded by the judge during the initial round may offer it during the appeal	
406.157	Expert Or Opinion Witnesses	Cannot call an employee as an expert witness for any party other than the agency; proponent cannot call an employee of the respondent	
406.159	Subpoenas	Sets forth the rules governing the issuance of	

Section	Title	Summary of Part	Notes/RLV Questions
		subpoenas	
406.161	Witness Fees	Witnesses are to be paid at the prevailing rate; fees are the responsibility of the requesting party	
406.163	Record	Record serves as the basis for the decision; facsimiles of original evidence may be submitted in lieu of the original	
406.165	Argument Before The Administrative Law Judge	Sets forth the timing of the various arguments including during the hearings, final oral arguments, and post-hearing briefings	
406.167	Initial Decision	Judge must provide an initial decision at the conclusion of the hearing and may provide a written decision no later than 30 days after hearing	
406.173	Interlocutory Appeals	Sets forth the rules governing interlocutory appeals	
406.175	Appeal From Initial Decision	Sets forth the rules for appealing the initial decision - limited to lack of evidence to substantiate ruling, incorrect interpretation of rule/law, or the commission of error	
406.177	Petition To Reconsider Or Modify A Final Decision And Order Of The FAA Decision Maker On Appeal	Sets forth the rules for appeal of final decision	
406.179	Judicial Review Of A Final Decision And Order	Sets forth the rules for judicial review - removes issue to federal district court system	

14 CFR 413 License Application Procedures

Effective Date	06/21/02
Contents and review purpose	This FAR part contains procedures for license for commercial space transportation. This FAR was reviewed for avoiding any conflicts in the new proposals for rules.

Section	Title	Summary of Part	Notes/RLV Questions
413.1	Scope	Provides general licensing procedures - points to 415/417 for licenses to launch or operate a launch site; points to 431, 433, and 435 for licenses for reentry and reentry sites	
413.3	Who Must Obtain A License	Basically anyone attempting to launch, operate a launch site, reenter, or operate a reentry site with any ties to the US (action's in the US, company is a US company, or owned by US citizens). Where the activity is outside the US, a US launch is still needed unless the US has an Agreement in place with a foreign country to allow them full jurisdiction when the activity occurs on their soil or in their airspace.	
413.5	Pre-Application Consultation	Pre-application consultation is required - allows early identification of issues and reduces delays, thus cost to applicant	
413.7	Application	Specifies the information to be provided and who must sign attesting to its accuracy for each of the various business types	
413.9	Confidentiality	Allows applicants to request data submitted to the FAA be treated as confidential	
413.11	Acceptance Of An Application	Applications may either be accepted allowing for FAA review activity to commence in conjunction with the planned activity or reject an application is it is not complete. Rejected applications may be resubmitted.	
413.13	Complete Application	Acceptance of an application does not prohibit the FAA from requesting additional data to make determinations associated with public safety and	

Section	Title	Summary of Part	Notes/RLV Questions
		national security.	
413.15	Review Period	States FAA must make a determination within 180 days; FAA may suspend the 180-day clock pending receipt of additional data needed to make a determination; FAA must determine if any additional data is needed within 120 days of receipt	
413.17	Continuing Accuracy Of Application; Supplemental Information; Amendment	Applicant is responsible for ensuring the continuing accuracy of their application; false statements are subject to fines and imprisonment	
413.19	Issuance Of A License	License issued after FAA makes final determination all elements of the related rules are met	
413.21	Denial Of A License Application	When denied a license, the FAA will inform applicant in writing along with reasons for denial; applicant has right to request reconsideration after submittal of additional data or request a hearing	
413.23	License Renewal	Applicant may request license renewal no later than 90 days of license expiration; license renewal request content are outlined as is ability to supplement data or request hearing if renewal is denied	

14 CFR 415 Launch License

Effective Date	05/23/02
Contents and review purpose	This FAR part contains launch license for commercial space transportation. This FAR was reviewed for avoiding any conflicts in the new proposals for rules.

Subpart A - General

Section	Title	Summary of Part	Notes/RLV Questions
415.1	Scope.	Requirements for obtaining a license to launch other than an RLV.	This makes the entire document NOT APPLICABLE.
415.3	Types Of Launch Licenses.		
415.5	Policy And Safety Approvals.		
415.7	Payload Determination.		
415.9	Issuance Of A Launch License.		
415.11	Additional License Terms And Conditions.		
415.13	Transfer Of A Launch License.		
415.15	Rights Not Conferred By Launch License.		
415.16	[Reserved]		
415.20	[Reserved]		
Subpart B -- Policy Review and Approval			
415.21	General.		
415.23	Policy Review.		
415.25	Application Requirements For Policy Review.		
415.27	Denial Of Policy Approval.		

Section	Title	Summary of Part	Notes/RLV Questions
415.28	[Reserved]		
415.30	[Reserved]		

14 CFR 420 License to Operate a Launch Site

Effective Date	05/23/02
Contents and review purpose	This FAR part contains procedures for obtaining and retaining a license to operate a launch site for the purposes of commercial space transportation. This FAR was reviewed for avoiding any conflicts in the new proposals for rules..

Subpart A -- General

Section	Title	Summary of Part	Notes/RLV Questions
420.1	Scope.	Prescribes info and demos to be provided to FAA as part of license application, bases for license approval, license terms and conditions, and post licensing requirements.	Applicable to RLVs.
420.3	Applicability.	Applies to any person seeking a license to operate a launch site or to a person licensed under this part. Amateur rocket activities do not need a license under this part.	Applicable to RLVs.
420.5	Definitions.	Defines: Ballistic Coefficient, Compatibility, Debris Dispersion Radius, Downrange Area, E,F,G Coordinate System, E,N,U Coord System, Effective Casualty Area, Explosive, Explosive Division, Explosive Equivalent, Explosive Hazard Facility, Flight Azimuth, Flight Corridor, Guided Suborbital Launch Vehicle, Hazard, Impact Dispersion Area,	Applicable to RLVs.
420.6	[Reserved]		
420.14	[Reserved]		
Subpart B -- Criteria and Information Requirements for Obtaining a License			
420.15	Information Requirements.	General Requirements: Launch Site Operator, Launch Site, Foreign Ownership, Environmental analysis, Launch Site Location, Explosive Site Plan, Launch Site Operations.	Applicable to Set 1 RLV operations. Set 2 it is still applicable with modifications to the semi-integrated nature of the NAS. In Set 3 further modifications for full integration to NAS. (Set 1 refers to Special Use Airspace; Set 2 refers to Semi-Integrated RLV use with the NAS; Set 3 refers to the full Integration

Section	Title	Summary of Part	Notes/RLV Questions
			of RLVs in the NAS.)
420.17	Bases For Issuance Of A License.	A license will be issued if the criteria are all met in 420.15, 420.19, 42.21, 420.23, 420.25, 420.27, 420.29, 420.31, 420.53, 420.55, 420.57, 420.59, 420.61 and 420.71. Plus the license must not jeopardize foreign policy or national security.	Applicable to Set 1 RLV operations. Since 420.23 deals with flight corridor, this may need modifications for Set 2 & 3 operations.
420.19	Launch Site Location Review -- General.	Must be able to launch ELV or RLV safely. With Ec of less than 30E-6.	Applicable but needs modifications for the RLVs to be "aircraft like" in operations.
420.21	Launch Site Location Review -- Launch Site Boundary.	Launch point must be no closer to the site boundary than the largest dispersion radius. For RLVs the debris radius represents the max distance from launch point that debris travels given worst-case failure in launch area.	Applicable for RLVs.
420.23	Launch Site Location Review -- Flight Corridor.	Gives guidance for 4 vehicle classes: Guided orbital expendable launch vehicle (debris with a ballistic coefficient of 3lbs/sq ft, uses App A or B); Guided suborbital ELV (debris with a ballistic coefficient of 3lbs/sq ft, includes impact dispersion area for last stage, uses App A or B); Unguided sub-orbital ELV (use App D); RLV (define a corridor that includes nominal and non-nominal flight)	Applicable for Sets 1,2 & 3. Sets 2&3 reprent a mixture of flight operation modes.
420.25	Launch Site Location Review -- Risk Analysis.	If the impact dispersion area defined in 420.23 contains population, then the risk shall be calculated and not exceed 30E-6.	Applicable to RLVs
420.27	Launch Site Location Review -- Information Requirements.	The following is to be provided to the FAA: map(s) showing launch point, flight azimuth, IIP, flight corridor, impact range and dispersion area; each launch vehicle type and class; trajectory data; wind data; vehicle apogee; populated area within the flight corridor or impact dispersion area; estimated Ec.	Applicable for Sets 1,2 & 3. Sets 2&3 reprent a mixture of flight operation modes.
420.29	Launch Site Location Review For Unproven Launch Vehicles.	Vague: applicant shall provide clear and convincing demo that the proposed launch site for an un-proven vehicle is safe by this part.	Applicable for Sets 1,2 & 3. Sets 2&3 reprent a mixture of flight operation modes.
420.31	Agreements.	Applicant shall complete an Agreement with the Coast Guard and FAA. If using a federal range then this Subpart is not applicable.	Applicable for Sets 1,2 & 3. Sets 2&3 reprent a mixture of flight operation modes.

Section	Title	Summary of Part	Notes/RLV Questions
420.32	[Reserved]		
420.40	[Reserved]		
Subpart C -- License Terms and Conditions			
420.41	License To Operate A Launch Site -- General.	A license to operate a launch site authorizes a licensee to operate a launch site in accordance with the representations contained in the application, terms and conditions in license order and 49U.S.C subtitle IX, ch 701 and this chapter.; to offer its launch site to a launch operator to each launch point for type and class of vehicle in application; must comply with other laws and regulations.	Applicable for Sets 1,2 & 3. Sets 2&3 represent a mixture of flight operation modes.
420.43	Duration.	In effect for 5 years	May be applicable.
420.45	Transfer Of A License To Operate A Launch Site.	Only FAA may transfer, only to applicant who submits application IAW 14 CFR part 413	May be applicable.
420.47	License Modification.	Applicant may request or FAA may do on own adds, removals, or modifications to license. Applicant applies to FAA to change.	Applicable to RLVs.
420.49	Compliance Monitoring.	Licensee shall allow access by and cooperate with federal officers or employees.	Applicable to RLVs. How will this evolve to Set 3 for fully integrated operations in the NAS?
Subpart D -- Responsibilities of a Licensee			
420.51	Responsibilities -- General.	Licensee shall operate launch site in accordance with the representations in the application. Licensee must comply with 49 U.S.C. subtitle IX, ch 701	Applicable to RLVs.
420.53	Control Of Public Access.	Licensee shall prevent unauthorized access, unauthorized, unescorted access to explosive hazard facilities through use of security personnel, surveillance, physical barriers, etc. Shall notify anyone entering the site of the safety rules and emergency and evacuation procedures. shall use alarms in emergency.	Applicable to RLVs.
420.55	Scheduling Of Launch Site Operations.	Licensee shall develop and implement procedures to schedule operations to ensure no potential mishap to harm the public. Shall provide to customers launch site scheduling reqs.	Applicable to RLVs.
420.57	Notifications.	Licensee shall notify each launch operator of limitations to	Applicable to RLVs for Set 1, 2,

Section	Title	Summary of Part	Notes/RLV Questions
		the site. Shall maintain its Agreement with the Coast Guard and FAA ATC having jurisdiction over the airspace through which the launch occurs. Shall notify local officials and land owners.	and 3 when not launching or landing from an airport.
420.59	Launch Site Accident Investigation Plan.	This specifies the necessary items to be included in the plan: General, Reporting Requirements, Response Plan, Investigation Plan, Launch Accidents, and Applicability of other accident investigation procedures	Applicable to RLVs.
420.61	Records.	A licensee shall maintain all records, data, & other material needed to verify its operations are IAW represented info. In case of accident, records are kept until end of federal investigation and FAA indicates they are no longer needed.	Applicable to RLVs.
420.63	Explosive Siting.	Launch site shall be IAW explosive site plan.	Applicable to RLVs.
420.65	Handling Of Solid Propellants.	Shall determine max total quantity of solid propellants and explosives; if division 1.1 and 1.3 are stored together they are treated as division 1.1; keep solid props away from other explosive hazards; use listed separation rules.	Not applicable to fully reusable RLVs.
420.67	Storage Or Handling Of Liquid Propellants.	Shall determine max total quantity of solid propellants and explosives; quantity includes piping up to a valve or termination point; explosive distance is to be the distance calculated from all the containers of liquid prop considered together not individually; Use App E for calculations of hazard areas.	Applicable to RLVs.
420.69	Solid And Liquid Propellants Located Together.	Determine minimum separation distance and public areas for safety. Conduct an analysis of maximum credible event (MCE).	Not applicable to fully reusable RLVs.
420.71	Lightning Protection.	Ensure public is not exposed to the hazards of an explosion due to lightning strike. Lightning protection system is not required when there is a lightning warning system.	Applicable to RLVs.
App A to Part 420	Method For Defining A Flight Corridor	Defines method for defining a Flight Corridor for a guided suborbital launch vehicle or any one of the 4 classes of guided orbital launch vehicles in Table of 420.19 .	Applicable to RLVs.
App B to Part 420	Method For Defining A Flight Corridor	Defines method for defining a Flight Corridor for a guided suborbital launch vehicle or any one of the 4 classes of guided orbital launch vehicles in Table of 420.19 .	Applicable to RLVs.

Section	Title	Summary of Part	Notes/RLV Questions
App C to Part 420	Risk Analysis	Calculations for Ec.	Applicable to RLVs.
App D to Part 420	Impact Dispersion Areas And Casualty Expectancy Estimate For An Unguided Suborbital Launch Vehicle	Calculate Impact Dispersion Areas and Casualty Expectancy Estimate for an Unguided Suborbital Launch Vehicle	Applicable to RLVs.
App E to Part 420	Tables For Explosive Site Plan	Tables for calculating explosive capabilities.	Applicable to RLVs.

14 CFR 431 Launch and Reentry of a Reusable Launch Vehicle

Effective Date	06/20/02
Contents and review purpose	This FAR part contains requirements for launch and reentry of a reusable launch vehicle. This FAR was reviewed for avoiding any conflicts in the new proposals for rules..

Subpart A - General

Section	Title	Summary of Part	Notes/RLV Questions
This part prescribes requirements for obtaining a reusable launch vehicle (RLV) mission license and post-licensing requirements with which a licensee must comply to remain licensed. Requirements for preparing a license application are contained in part 413 of this subchapter. Part 431 is heavily administrative setting forth lists or required information and procedures for areas ranging from RLV mission licenses to payload reentry determinations. Currently, all RLV applicants will require licensing despite level of interaction within the ATC environment. The review garnered certification vs. licensing, enforcement action and debris management as the primary issues. Certification of RLV operations in the future may replace licensing requirements but would remain independent from Set applicability also.			
431.1	Scope.	Requirements for obtaining RLV mission license and post-licensing requirements. Requirements for preparing launch license.	
431.3	Types Of Reusable Launch Vehicle Mission Licenses.	Types of Licenses: Mission Specific License (one model or type) and Operator Licenses. (family of RLVs)	
431.5	Policy And Safety Approvals.	To get a license applicant must obtain policy and safety approvals from FAA.	
431.7	Payload And Payload Reentry Determinations.	Unless exempt payload determination is required for launch and reentry. FAA conducts a review and may do so independently of a license application.	
431.9	Issuance Of A Reusable Launch Vehicle Mission License.	License allows launch, reenter, landing of RLV and payload subject to conditions of license orders including financial requirements.	
431.11	Additional	FAA may amend an RLV mission license.	

Section	Title	Summary of Part	Notes/RLV Questions
	License Terms And Conditions.		
431.13	Transfer Of A Reusable Launch Vehicle Mission License.	Only FAA may transfer an RLV mission license.	
431.15	Rights Not Conferred By A Reusable Launch Vehicle Mission License.	Issuance of an RLV mission license does not relieve licensee of compliance with the law.	
431.16431.20	[Reserved]		
Subpart B - Policy Review and Approval for Launch and Reentry of a Reusable Launch Vehicle			The FAA Issues A Policy Approval To An RLV Mission License Applicant Upon Completion Of A Favorable Policy Review. A Policy Approval Is Part Of The Licensing Record On Which The Licensing Determination Is Based.
431.21	General.	FAA issues policy approval to applicant after favorable review.	
431.23	Policy Review.	FAA reviews and determines any issues other than those in safety review would adversely affect national security, foreign policy, public health and safety or international obligations.	
431.25	Application Requirements For Policy Review.	Administrative requirements for application.	
431.27	Denial Of Policy Approval.	FAA notifies in writing if applicant denied.	
431.28431.	[Reserved]		

Section	Title	Summary of Part	Notes/RLV Questions
30			
Subpart C - Safety Review and Approval for Launch and Reentry of a Reusable Launch Vehicle			(A) The FAA Conducts A Safety Review To Determine Whether An Applicant Is Capable Of Launching An RLV And Payload, If Any, From A Designated Launch Site, And Reentering The RLV And Payload, If Any, To A Designated Reentry Site Or Location, Or Otherwise Landing It On Earth, Without Jeopardizing Public Health And Safety And The Safety Of Property. (B) The FAA Issues A Safety Approval To An RLV Mission License Applicant That Satisfies The Requirements Of This Subpart. The FAA Evaluates On An Individual Basis All Public Safety Aspects Of A Proposed RLV Mission To Ensure They Are Sufficient To Support Safe Conduct Of The Mission. A Safety Approval Is Part Of The Licensing Record On Which The FAA's Licensing Determination Is Based. (C) The FAA Advises An Applicant, In Writing, Of Any Issue Raised During A Safety Review That Would Impede Issuance Of A Safety Approval. The Applicant May Respond, In Writing, Or Revise Its License Application.
431.31	General.	FAA conducts a safety review to determine if operations will not jeopardize public health and safety and safety of property.	
431.33	Safety Organization.	Applicant will maintain safety organization and document it. Shall designate person responsible for RLV activities and safety official.	
431.35	Acceptable Reusable Launch Vehicle Mission Risk.	Applicant must demonstrate acceptable risk using Ec and employ a safety system process.	
431.37	Mission Readiness.	Procedures for verifying mission readiness.	
431.39	Mission Rules, Procedures, Contingency Plans, And	Applicant must submit mission rules, procedures, and checklists, emergency plans that ensure safe conduct of operations.	

Section	Title	Summary of Part	Notes/RLV Questions
	Checklists		
431.41	Communications Plan.	Applicant shall submit plan for vehicle safety operations personnel communications procedures during the mission.	
431.43	Reusable Launch Vehicle Mission Operational Requirements And Restrictions.	Applicant for RLV mission safety approval list of procedures that must be submitted. Ranges from conformance to system safety process to abort procedures.	
431.45	Mishap Investigation Plan And Emergency Response Plan.	Applicant shall submit a mishap investigation plan (MIP) containing procedures for reporting of and responding to accidents or incidences.	
431.47	Denial Of Safety Approval	FAA notifies in writing if applicant id denied.	
431.48-43150	[Reserved]		

Section	Title	Summary of Part	Notes/RLV Questions
Subpart D -- Payload Reentry Review and Determination			(A) A Payload Reentry Review Is Conducted To Examine The Policy And Safety Issues Related To The Proposed Reentry Of A Payload, Other Than A U.S. Government Payload Or A Payload Whose Reentry Is Subject To Regulation By Another Federal Agency, To Determine Whether The FAA Will Approve Reentry Of The Payload. (B) A Payload Reentry Review May Be Conducted As Part Of An RLV Mission License Application Review Or May Be Requested By A Payload Owner Or Operator In Advance Of Or Separate From An RLV Mission License Application. (C) A Payload Reentry Determination Will Be Made Part Of The Licensing Record On Which The FAA's Licensing Determination Is Based.
431.51	General.	Payload reentry review is conducted to examine policy and safety issues related to proposed reentry of payload, other than U.S. gov't payload or a payload subject to regulation by another Federal agency.	
431.53	Classes Of Payloads.	FAA may approve the return of a type or class of payload.	
431.55	Payload Reentry Review.	FAA determines if reentry any issues that would adversely affect national security, foreign policy, public health and safety or international obligations.	
431.57	Information Requirements For Payload Reentry Review.	Lists what a person requesting reentry payload review should identify.	
431.59	Issuance Of Payload Reentry Determination.	FAA issues a favorable payload reentry determination unless it would adversely affect national security, foreign policy, public health and safety or international obligations. Notification in writing.	
431.61	Incorporation	Applicant my include favorable payload	

Section	Title	Summary of Part	Notes/RLV Questions
	Of Payload Reentry Determination In License Application.	reentry determination as part of it's application.	
431.62431.70	[Reserved]		
Subpart E -- Post-Licensing Requirements -- Reusable Launch Vehicle Mission License Terms and Conditions			(A) A Licensee Is Responsible For Ensuring The Safe Conduct Of An RLV Mission And For Protecting Public Health And Safety And The Safety Of Property During The Conduct Of The Mission. (B) A Licensee Must Conduct A Licensed RLV Mission And Perform RLV Safety Procedures In Accordance With Representations Made In Its License Application. A Licensee's Failure To Perform Safety Procedures In Accordance With The Representations Made In The License Application Or Comply With Any License Condition Is Sufficient Basis For The Revocation Of A License Or Other Appropriate Enforcement Action.
431.71	Public Safety Responsibility.	A licensee is responsible for ensuring the safe conduct of an RLV mission and for protecting public health and safety and the safety of property during the conduct of the mission. A licensee must conduct a licensed RLV mission and perform RLV safety procedures IAW representations made in its license application. A licensee's failure to perform safety procedures IAW with representations made in the license application or comply with any license condition is sufficient basis for the revocation of a license or other appropriate enforcement action.	RTI: What other enforcement action? Should civil penalties be applied under FAR 383, Civil Penalties? Would matters involving litigation mirror those that apply to civil aviation or air carrier operations?
431.73	Continuing Accuracy Of	Licensee is responsible for the continuing accuracy of representations contained in its	

Section	Title	Summary of Part	Notes/RLV Questions
	License Application; Application For Modification Of License.	application for the entire term of the license and must apply to FAA for modifications.	
431.75	Agreements.	Launch and reentry site use Agreements and Agreements for notices to mariners and airmen.	
431.77	Records.	Licensee shall maintain for 3 years all records, data, and other material to verify that a licensed RLV mission is conducted IAW representations contained in its application.	
431.79	Reusable Launch Vehicle Mission Reporting Requirements.	Not less than 60 days before each RLV mission conducted under a license, a licensee shall provide the FAA payload info, flight info, etc.	
431.81	Financial Responsibility Requirements	A licensee must comply with financial responsibility requirements specified in its license.	
431.83	Compliance Monitoring.	A licensee shall allow access by, and cooperate with, Federal officers or employees or other individuals authorized by the FAA to observe any activities of the licensee, or of the licensee's contractors or subcontractors, associated with the conduct of a licensed RLV mission.	
431.85	Registration Of Space Objects.	To assist the U.S. Government in implementing Article IV of the 1975 Convention on Registration of Objects Launched into Outer Space, each licensee shall provide to the FAA the information listed for all objects placed in space by a licensed RLV mission, including and RLV	RTI: Heavy expansion of "debris" standards required. Suggest debris reduction, debris accountability, debris removal and debris collision avoidance systems guidance be developed and governed (by who?). Probably also need to define what the acceptable risk is since an RLV would most likely "drop" something on every flight- a booster, a payload fairing, the payload itself, etc. All of this eventually comes back to earth. A

Section	Title	Summary of Part	Notes/RLV Questions
		and components, except....	recent article in an issue of Space.com's magazine from last year about how the Russians handle expended parts of their boosters. They just let them crash to the ground, and there are places under common launch flight paths littered with big fuel tanks and Soyuz parts. The locals cut them up and sell the scrap.
431.86431.90	[Reserved		
Subpart F -- Environmental Review			An Applicant Shall Provide The FAA With Sufficient Information To Analyze The Environmental Impacts Associated With Proposed Operation Of An RLV, Including The Impacts Of Anticipated Activities To Be Performed At Its Reentry Site. The Information Provided By An Applicant Must Be Sufficient To Enable The FAA To Comply With The Requirements Of The National Environmental Policy Act, 42 U.S.C. 4321 Et Seq., The Council On Environmental Quality Regulations For Implementing The Procedural Provisions Of The National Environmental Policy Act, 40 CFR Parts 1500-1508, And The FAA's Procedures For Considering Environmental Impacts, FAA Order 1050.1D. It Also Levies Enforcement Action For Licensee's Failure To Perform Safety Procedures IAW With Representations Made In The License Application Or Comply With Any License Condition But It Fails To Specify What Type Of Enforcement Action? Should Civil Penalties Be Applied Under FAR 383, Civil Penalties? Would Matters Involving Litigation Mirror Those That Apply To Civil Aviation Or Air Carrier Operations? As With Other FAR Parts, Heavy Expansion Of "Debris" Standards Is Required In The Areas Of Debris Reduction, Debris Accountability, Debris Removal, Debris Collision Avoidance Systems.
431.91	General.	An applicant shall provide the FAA with sufficient information to analyze the environmental impacts associated with proposed operation of an RLV, including the impacts of anticipated activities to be	

Section	Title	Summary of Part	Notes/RLV Questions
		performed at its reentry site. The information provided by an applicant must be sufficient to enable the FAA to comply with the requirements of the National Environmental Policy Act, 42 U.S.C.. 4321 et seq., the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act, 40 CFR parts 1500-1508, and the FAA's Procedures for Considering Environmental Impacts, FAA Order 1050.1D.	
431.93	Environmental Information.	An applicant shall submit environmental information concerning -- (a) A designated launch and reentry site, including contingency abort locations, if any, not covered by existing FAA or other Federal environmental documentation; (b) A proposed new RLV with characteristics falling measurably outside the parameters of existing environmental documentation; (c) A proposed reentry to an established reentry site involving an RLV with characteristics falling measurably outside the parameters of existing environmental impact statements covering that site; (d) A proposed payload that may have significant environmental impacts in the event of a reentry accident; and (e) Other factors as necessary to comply with the National Environmental Policy Act.	

14 CFR 433 License to Operate Reentry site

Effective Date	05/23/02
Contents and review purpose	This FAR part contains requirements for obtaining and retaining a license to operate reentry site for commercial space transportation. This FAR was reviewed for avoiding any conflicts in the new proposals for rules.

Section	Title	Summary of Part	Notes/RLV Questions
433.1	General.	FAA evaluates on individual basis for reentry site.	Applicable to RLVs
433.3	Issuance Of A License To Operate A Reentry Site.	Issued if determined that reentry site doesn't jeopardize public health and safety, safety of US property, US national security or foreign policy or international obligations. Allows licensee	Applicable to RLVs. Must look at Sets 2 & 3 also. (Set 1 refers to Special Use Airspace; Set 2 refers to Semi-Integrated RLV use with the NAS; Set 3 refers to the full Integration of RLVs in the NAS.)
433.5	Operational Restrictions On A Reentry Site.	Three-sigma footprint of the vehicle upon return is wholly contained with in the site.	Applicable to RLVs. What modifications are needed when considering Sets 1,2, and 3?
433.7	Environmental.	Applicant shall provide info to FAA to analyze environmental impacts. Must be sufficient to comply with National Environmental Policy Act.	Applicable to RLVS. To what extent do airport license applications get this consideration?

Section	Title	Summary of Part	Notes/RLV Questions
433.9	Environmental Information	Applicant shall submit environmental info concerning proposed reentry site not covered by existing environmental docs for assessing reentry impacts.	Applicable to RLVS. To what extent do airport license applications get this consideration?

14 CFR 435 Reentry of a Reentry Vehicle Other than a Reusable Launch Vehicle (RLV)

Effective Date	05/23/02
Contents and review purpose	This FAR part contains requirements for the reentry vehicle other than an RLV. This FAR was reviewed for avoiding any conflicts in the new proposals for rules.

Subpart A -- General

Section	Title	Summary of Part	Notes/RLV Questions
435.1	Scope.		NOT APPLICABLE
435.3	Types Of Reentry Licenses.		
435.5	Policy And Safety Approvals.		
435.7	Payload Reentry Determination.		
435.9	Issuance Of A Reentry License.		
435.11	Additional License Terms And Conditions.		
435.13	Transfer Of A Reentry License.		
435.15	Rights Not Conferred By Reentry License.		
435.16435.20	[Reserved]		
Subpart B -- Policy Review and Approval for Reentry of a Reentry Vehicle			
435.21	General.		
435.23	Policy Review Requirements And Procedures.		
435.24435.30	[Reserved]		
Subpart C -- Safety Review and Approval for Reentry of a Reentry Vehicle			
435.31	General.		
435.33	Safety Review Requirements And Procedures.		
435.35	Acceptable Reentry Risk For Reentry Of A Reentry Vehicle.		
435.36435.40	[Reserved]		
Subpart D -- Payload Reentry Review and Determination			
435.41	General.		
435.43	Payload Reentry Review Requirements And Procedures.		

Section	Title	Summary of Part	Notes/RLV Questions
435.44435.50	[Reserved]		
Subpart E -- Post-Licensing Requirements -- Reentry License Terms and Conditions			
435.51	General.		
435.52435.60	[Reserved]		

14 CFR 440 Financial Responsibility

Effective Date	05/23/02
Contents and review purpose	This FAR part contains requirements for financial responsibility of organizations responsible for commercial space transportation for launch. This FAR was reviewed for avoiding any conflicts in the new proposals for rules.

Subpart A – Financial Responsibility for Licenses Launch Activities

Section	Title	Summary of Part	Notes/RLV Questions
440.1	Scope Of Part.	Sets forth financial responsibility and allocation of risk reqs applicable to commercial launch activities.	Applicable to RLVs.
440.3	Definitions.	Definitions provided for: Bodily injury, contractors and subcontractors, customer, federal range facility, financial responsibility, government personnel, hazardous operations, liability, license, licensed launch activities, maximum probable loss, office, property damage, regulations, united states	Applicable to RLVs.
440.5	General.	All who are to be licensed must comply with this Part. It prescribes amounts of financial responsibility. It lists exceptions to the extent that financial responsibility is required for damage sustained by the United States.	Applicable to RLVs.
440.7	Determination Of Maximum Probable Loss.	Max Probable Loss is calculated by the FAA and is used as the basis for the financial responsibility. Appendix A sets forth the reqs for the MPL calculations.	Applicable to RLVs.

Section	Title	Summary of Part	Notes/RLV Questions
440.9	Insurance Requirements For Licensed Launch Activities.	A condition of licensing is that the licensee must comply with insurance requirements. Licensee must obtain and maintain in effect a policy or policies of liability insurance. FAA will prescribe the amount of insurance required to compensate the total of covered 3rd party claims for bodily injury or property damage not to exceed $500M or the max liability insurance available on the world market. FAA shall prescribe amount of insurance required to compensate claims for property damage under paragraph (d) not to exceed $100M or max available on world market.	Applicable to RLVs. How will this be modified to account for passengers?
440.11	Duration Of Coverage; Modifications.	Shall be in force from commencement of launch activities until completion of launch activities at the launch site. For orbital launches until the later of: 30 days following payload separation or attempted separation or 30 days from ignition.	Applicable to RLVs. How will this be modified to account for passengers?
440.13	Standard Conditions Of Insurance Coverage.	Insurance obtained shall comply with the following terms and conditions of coverage: 1) bankruptcy or insolvency of an insured, policy limits shall apply separately to each occurrence, each policy must pay claims from the first dollar of loss without regard to deductible, each policy shall not be invalidated by any action or inaction of the licensee, exclusions of coverage must be specified, insurance shall be primary, each policy must be placed with an insurer of recognized reputation and responsibility that is licensed to do business in any state, territory, possession of the US or DC.	Applicable to RLVs.

Section	Title	Summary of Part	Notes/RLV Questions
440.15	Demonstration Of Compliance.	Licensee must submit evidence of financial responsibility and compliance with allocation of risk requirements. Evidence must be submitted at least 30 days before commencement of licensed launch activities.. Evidence of other financial responsibility other than insurance must be submitted at least 60 days prior to launch. A licensee must show compliance by providing proof of insurance and certifications required must be signed by a duly authorized officer of the licensee.	Applicable to RLVs.
440.17	Reciprocal Waiver Of Claims Requirement.	Licensee shall comply with the reciprocal waiver of claims reqs. Licensee shall implement reciprocal waivers of claims with its contractors and subcontractors, its customers and customer's contractors and subcontractors. A three party reciprocal waiver of claims is to be entered into when the US Government and agencies or contractors are involved.	Applicable to RLVs.
440.19	United States Payment Of Excess Third-Party Liability Claims.	The US pays successful covered claims of a third party against the license, the customer, and the contractors and subcontractors of the licensee and the customer involved in the launch activities. Payment by the US shall not be made for any part of such claims for bodily injury or property damage. The US will pay after the policy period from the first dollar of loss up to $1,500,000,000.	Applicable to RLVs.
App A to Part 440	Information Requirements For Obtaining A Maximum Probable Loss Determination For Licensed Launch Activities	This appendix covers the required information for determining maximum probable loss: General Information (such as mission description, launch trajectory, flight sequence); Pre-flight Processing Operations; Flight Operations; Post-flight Processing Operations	Applicable to RLVs for Set 1. How will this be handled in the future for Set 2&3 and the ConOps for an integrated NAS?

Section	Title	Summary of Part	Notes/RLV Questions
App B to Part 440	Agreement For Waiver Of Claims And Assumption Of Responsibility	This summarizes the Agreement for waiver of claims and assumption of responsibility. It includes Definitions; Waiver and Release of Claims; Assumption of Responsibility; Extension of Assumption of Responsibility and Waiver; Indemnification; Assurances Under 49 U.S.C. 70112(E); and Miscellaneous items.	Applicable to RLVs. How will the adaptation of Set 2&3 affect this?

14 CFR 450 Financial Responsibility

Effective Date	06/24/02
Contents and review purpose	This FAR part contains requirements for financial responsibility of organizations responsible for commercial space transportation for reentry. This FAR was reviewed for avoiding any conflicts in the new proposals for rules.

Section	Title	Summary of Part	Notes/RLV Questions
450.1	Scope Of Part; Basis	This part sets forth financial responsibility and allocation of risk requirements applicable to commercial space reentry activities that are authorized to be conducted under a license issued pursuant to this subchapter.	This FAR Part deals nearly entirely with liability and insurance requirements/activities for Licensed Reentry Activities. While it does not deal directly with public safety it underpins the need to make the licensee financially responsible and it establishes allocation of risk requirements.
450.3	Definitions	Self-explanatory	
450.5	General	Explains that no person shall commence or conduct reentry activities that require a license unless that person has obtained a license and fully demonstrated compliance with the financial responsibility and allocation of risk requirements set forth in this part. That the FAA AST office shall prescribe the amount of financial responsibility a licensee is required to obtain and any additions to or modifications of the amount in a license order issued concurrent with or subsequent to the issuance of a license. It also states that demonstration of financial responsibility under this part shall not relieve the licensee of ultimate responsibility for liability, loss, or damage sustained by the United States resulting from licensed reentry activities with listed exceptions.	

Section	Title	Summary of Part	Notes/RLV Questions
450.7	Determination Of Maximum Probable Loss	The AST office shall determine the maximum probable loss (MPL) from covered claims by a third party for bodily injury or property damage, and the United States, its agencies, and its contractors and subcontractors for covered property damage or loss, resulting from licensed reentry activities. The maximum probable loss determination forms the basis for financial responsibility requirements issued in a license order. Done with 90 days of request and after consulting other federal agencies.	
450.9	Insurance Requirements For Licensed Reentry Activities.	As a condition of each reentry license, the licensee must comply with insurance requirements set forth in this section and in a license order issued by the AST Office or otherwise demonstrate the required amount of financial responsibility. Licensee must obtain and maintain insurance in amount determined by AST office. Amounts depend on maximum probable loss but will not exceed the lesser of $500 million or.....	
450.11	Duration Of Coverage; Modifications.	Insurance coverage required under §450.9, or other form of financial responsibility, shall attach upon commencement of licensed reentry activities, and remain in full force and effect as follows: Until completion of licensed reentry activities….	
450.13	Standard Conditions Of Insurance Coverage	Insurance obtained under §450.9 shall comply with the following terms and conditions of coverage: Bankruptcy does no relieve insured, must make payments….	
450.15	Demonstration Of Compliance.	A licensee must submit evidence of financial responsibility and compliance with allocation of risk requirements under this part, as follows, unless a license order specifies otherwise due to the proximity of the licensee's intended date for commencement of licensed activities: waiver of claims submitted, evidence of insurance submitted within 30 days,....	
450.17	Reciprocal Waiver Of Claims Requirements.	As a condition of each reentry license, the licensee shall comply with reciprocal waiver of claims requirements as set forth in this section, which includes those between contractors and subcontractors, it's customers, the launch licensee,……	

Section	Title	Summary of Part	Notes/RLV Questions
450.19	United States Payment Of Excess Third-Party Liability Claims	The United States pays successful covered claims (including reasonable expenses of litigation or settlement) of a third party against the licensee, the customer, and the contractors and subcontractors of the licensee and the customer, and the employees of each involved in licensed reentry activities, the licensee, customer and the contractors and subcontractors of each involved in licensed launch activities associated with a particular reentry, and the contractors and subcontractors of the United States and its agencies, and their employees, involved in licensed reentry activities and licensed launch activities associated with a particular reentry, to the extent provided in an appropriation law or other legislative authority providing for payment of claims in accordance with 49 U.S.C. 70113, and to the extent the total amount of such covered claims arising out of any particular reentry: exceeds the amount of insurance and is not more then $1,5000,000,000, upon expiration of policy period.....	
App A to Part 450	Information Requirements For Obtaining A Maximum Probable Loss Determination For Licensed Reentry Activities.	GENERAL INFORMATION FLIGHT List information required in the following areas for any person requesting a maximum probably loss determination: Operations, Flight Operations and Post-flight processing.	
App B to Part 450	Agreement For Waiver Of Claims And Assumption Of Responsibility.	Provides format for Waiver	